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BLISTER RUST CONTROL WORK

in the

EASTERN STATES

1936

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REPORT OF
COOPERATIVE BLISTER RUST CONTROL ACTIVITIES AND ACCOMPLISHMENTS
IN THE NORTHEASTERN STATES*
CALENDAR YEARS 1935 AND 1936
ALSO
PERIOD 1918-1936, INCLUSIVE



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COOPERATIVE BLISTER RUST CONTROL ACTIVITIES AND ACCOMPLISHMENTS
IN THE NORTHEASTERN STATES

This report is a detailed summary and analysis of blister rust control activities and accomplishments in the Northeastern States for all years and especially gives the pertinent facts regarding the 1935 and 1936 work. The information is segregated by programs, each being complete in itself and divided into the various projects - Ribes eradication, nursery sanitation, Ribes nigrum elimination, pine and control area mapping, canker elimination and field studies. In addition, the results for all programs are summarized and the status of each project indicated. Also, in the back portion of the report, there is a separate summary for each state outlining the problem and the accomplishments and status of the various phases of control work. The report is based on the yearly statistical records submitted by the state leaders and general observations made by the Regional Leader. No attempt has been made to discuss future plans, since they will be presented in separate statements as needed.

White Pine Conditions

The white pine crop in the Northeastern States comprises 7,667,127 acres and has a normal commercial value of \$315,726,491 (Table 105). This acreage is classified as follows: Pure pine (80 percent or over), 2,808,179 acres; mixed pine (21-79 percent pine in mixture), 2,921,434 acres; and pine stocking and restocking in other types, 1,937,514 acres. Of this total acreage, 71.3 percent is located in the states of Maine, New Hampshire and New York. White pine is the most important tree in the extensive territory where it occurs in pure stands, or where it constitutes a high percentage of the trees in mixed types (See Page 6). In such situations it covers a larger area, is used for more purposes and brings a greater return than any other species. For several years, the lumber cut of white pine in Maine and New Hampshire has been about 65 percent of the entire lumber cut in those two states. In many sections, white pine is being produced on a sustained yield basis, notably in Plymouth and northern Worcester Counties in Massachusetts and in southern Cheshire County, New Hampshire. These conditions exist today in spite of about 300 years of logging. The management of white pine as a permanent crop both on farm woodlots and on wild lands is essential to maintain the prosperity of the region.

The rate of growth of white pine on good sites out-ranks all other hard or soft-woods. In many instances, white pine constitutes a bank reserve for rural residents, especially farmers. Without any expenditure for cultivation, this tree has been the means of reducing or eliminating mortgages, educating children and often providing for old age independence. A high percentage of the wood-using industries in the Northeastern States use white pine in the manufacture of hundreds of commodities including boxes, toys, matches, pails and screen doors. It is also used for interior and exterior finish of homes. The use of knotty pine for interiors and pine slabbing for cabins is becoming more prevalent. The logging and manufacture of white pine provides employment for tens of thousands of persons. In spite of competition by substitute containers, the manufacture of wooden boxes continues at a fairly good volume, since many commodities require a more safe type of container than are offered by the wood substitutes.

The scenic, recreational and watershed protection value of white pine in the Northeastern States probably equals or exceeds its commercial worth. The region is becoming increasingly popular as a summer and winter playground, and its attractiveness in this respect is due in no small degree to the white pines which are green throughout the year. In the lake and lower mountain sections white pine add greatly to attractiveness and popularity of the resort centers. The beauty of many scenic places is frequently due to the fascinating pine growth in some unusual situation.

White pine has been extensively planted for ornamental and reforestation purposes throughout the Northeastern States. During the period 1931 to 1936, inclusive, the state nurseries in this region distributed 62,768,910 white pines, 75% of these trees originating in the New York state nurseries. In Rhode Island, where there was no state nursery, during this period, 1,038,730 pines were purchased from out-of-state nurseries. Also, in Connecticut many plantings were made from stock obtained from private nurseries.

Ribes Conditions

Wild Ribes occur more or less generally distributed throughout the white pine region of the Northeastern States, but vary locally as to site, species, size, and abundance. Nine indigenous species have been encountered in control work, four being gooseberries and five currants, exclusive of Ribes vulgare which is considered an escaped cultivated red currant. The number of Ribes varies from 100 or more per acre in some sites to few or none in others. The aggregate, however, represents many millions of such bushes, as evidenced by the eradication of 216,892,738 wild Ribes in the Northeastern States during the period 1918 to 1936, inclusive. It has been determined by Fivaz and others that shade is an important factor in eliminating and suppressing Ribes, that Ribes seed remain dormant and viable in the duff for years, and that disturbance of the duff by logging, fire, animals, or mechanical means favors the germination of such dormant seeds. Therefore, Ribes are usually found most abundant in open situations, such as recently cut-over or burned areas, pastures, swamps, fence rows, etc. The amount and distribution of wild Ribes per acre, based on town units, is designated on page 7. The cultivated Ribes problem is indicated by the 928,675 cultivated bushes that have been destroyed in applying control measures since 1918.

Pine Infection Conditions

Blister rust infection is general throughout the white pine range in New England and New York. Over extensive areas, from 1 to 20 percent or more of the pines are infected; and in many local pine tracts, from 50 to 100 percent of the trees are dead or dying. The amount of disease varies considerably in different localities and is directly influenced by such factors as the number of original infection centers caused by the planting of imported diseased pine, the distribution and amount of native pine, association of pine and Ribes, abundance of Ribes, climatic conditions, and the application of control measures. In Essex and Warren Counties, New York, and in the upper Connecticut River Valley region, where Ribes are generally abundant, pine infection is also heaviest; 11 to 20 percent or more of the trees being diseased. In southern New England and in most of southern New York, less than one percent of the pines are infected, except in a few limited areas.

Blister rust has existed in Pennsylvania and New Jersey for several years, but was not reported on native pines in the former state until 1927, and in the latter during 1934. The relatively slow spread of the disease prior to that time may be attributed chiefly to the fewer plantations of imported diseased stock and to the localization of native pine areas. Studies, made in unprotected areas in Pennsylvania during December 1934 and January-February 1935, show that the amount of disease is increasing at an alarming rate. Ten plots, comprising $9\frac{1}{4}$ acres, were laid out in the counties of Clarion and Potter. These plots contained 3,984 white pines, of which 2,618, or 66 percent, were infected with 10,605 cankers. The intensification of the disease is indicated by the fact that 62 percent of the cankers were of 1930 or 1931 origin. Fifty percent of the infected trees have trunk cankers and over 14 percent of the diseased pines have already been killed.

The scouting work in New Jersey during 1934 revealed 17 scattered infections on native pines in the township of Montague in the northwestern part of the state. A pre-eradication survey in the township of West Milford in Passaic County also showed several spot pine infections, the heaviest being on a property where *Ribes nigrum* had existed up to a few years ago.

During 1934 plot studies were made to determine the amount of blister rust infection on white pine in unprotected areas. A total of 35 plots, comprising 31.2 acres, were established in the States of New Hampshire, New York, Vermont, Maine, Massachusetts and Pennsylvania. These plots contained 17,569 white pine, 49.9 percent of which were infected with 22,228 cankers. Over 37 percent of these infections originated during the years 1930 and 1931, which shows the danger of delaying protection work.

An additional study was made in a 9-3/4 acre plot in an unprotected area in the township of Minot, Maine. Over 49 percent of the 5,262 pines were found to be infected. In this study only the age of the oldest canker on each infected tree was recorded, consequently there is no information available on the total number of cankers.

The distribution and amount of white pine blister rust infection, based on township units, in New England and New York is shown on Page 6. A direct correlation between pine infection and abundance of *Ribes* is apparent when this map is compared with the *Ribes* map on Page 7.

General Summary of Blister Rust Control Accomplishments in the Northeastern States During the Period 1918 to 1936, Inclusive

Ribes Eradication

The total control area in the Northeastern States comprises 14,168,694 acres. Initial protection has been established on 79.2%, or 11,221,205 acres, by the eradication of 184,614,907 wild *Ribes* and 718,195 cultivated bushes. There still remains 2,947,489 acres in need of initial control work, requiring 823,949 man days of labor. Most of the unworked areas are located in New York, Maine, Vermont, New Hampshire and Pennsylvania. (Table 93, also map on page 142). Since 1922 a total of 2,678,986 acres has been re-examined for *Ribes*. This reworking resulted in the destruction of an additional 31,862,200 wild *Ribes* and 60,416 cultivated bushes on 23.9% of the total area initially protected. At the present time 4,711,854 acres require re-examination. It is estimated such work will necessitate 720,646 man days of labor. (Table 93, also map on page 144.) The acreage protected initially or re-examined under the various Emergency programs since 1933 represents 26.4 percent of the total area worked in this region during the period 1918 to 1936 inclusive.

The *Ribes* eradication work conducted under the Emergency programs since 1933 resulted in increasing the area protected by 3,123,092 acres, or 73%, more than what would have been accomplished if only regular money had been available. This conclusion is based on the following analysis: During 1932, the last year prior to the advent of the Emergency programs and the decrease in the regular appropriation, \$94,604.62 regular money was expended for salaries and expenses of the state and district leaders in this region, and a total of 544,620 acres were cleared of *Ribes*. Since 1932, regular funds for cooperation with the states in this region have averaged only \$34,035.21 per year. During 1932-1936, if Emergency money had not been available, the regular allotment for cooperation with the states would probably not have exceeded \$50,000 per year. This would have necessitated a reduction in the district leader personnel and a corresponding decrease in the amount of control work performed, since under the regular program the acreage protected depends chiefly upon the success of the district leaders in securing local cooperation. Assuming that the decrease in the acreage protected would be comparable to the 47.1% decrease in regular funds from \$94,604.62 to \$50,000 per year, an average of only 288,103 acres per year would have been protected during the period.

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1933-1936, inclusive. Actually, an average of 1,068,876 acres per year was cleared of Ribes in this region during the past four years. The Emergency programs have made possible the systematic working of large areas, rather than individual units. They have also permitted the application of control measures on lands where such work was urgent, rather than basing the selection on local cooperation. It has been possible to work many remote areas, also tracts containing an abundance of Ribes, where the cost of control had prevented prior application of protection measures. This control work has served to eliminate many sources of infection that otherwise would have persisted. Thousands of men have received training in Ribes eradication work, and many of these persons will be available for similar work in the future. The training should also enable many of these men to maintain control of blister rust on their own properties. The Emergency programs have not only resulted in the protection of hundreds of thousands of acres of valuable pine; but of even greater importance, they have helped to rehabilitate thousands of men who were on the verge of despair prior to the inauguration of such work.

Ribes Nigrum Elimination

Black currant elimination has been conducted as a special project in four states - New York, Rhode Island, Connecticut and Massachusetts, a total of 101,240 Ribes nigrum and 44,251 other cultivated bushes being destroyed. (Table 97.) In Rhode Island and Connecticut, the work has been completed; and in Massachusetts, it has been finished on the mainland in all townships except Worcester. Out of a total of 1,012 townships in New York, the project has been completed in 225 and partially finished in 50 others. (Table 98.) In conjunction with the regular control activities in the other Northeastern States, such bushes have been eradicated in the worked portions of the control areas. Few Ribes nigrum have been found in these latter states. In Rhode Island and New York practically all of the work was performed under the Regular program; but in Massachusetts and Connecticut, 16.9% and 89.5%, respectively, of the total man days on this project in each of these states represented labor provided by Emergency programs.

Nursery Sanitation

At the close of the 1936 Ribes eradication season, 49 nurseries had established and were maintaining Ribes-free sanitation zones, 28 of these nurseries being privately owned, 18 belonging to the respective states, and 3 operated by the Soil Conservation Service. (Table 96.) Twenty-two other nurseries had established sanitation zones, but abandoned them prior to 1936. In the 32 nurseries worked during 1936, there existed at that time a total of 50,605,595 white pines.

Pine and Control Area Mapping

Pine and control area mapping has been performed in all the Northeastern States except New Jersey. Such activities were very limited prior to the advent of the Emergency programs for the reasons indicated under heading "Pine and Control Area Mapping" on pages 29 and 30. Under the various control programs during 1933 to 1936, inclusive, 4,750,792 acres in 1,312 townships were mapped and 6,103,629 additional acres examined but not mapped due to lack of sufficient pine to justify the cost of control. (Table 100.) A total of 8,160 miles of control area boundary lines were also painted in the field. Over 95% of the acreage mapped in the Northeastern States during the period 1933-1936, inclusive, resulted from work performed under the various Emergency Programs. Very little of this pre-eradication survey work could have been conducted if Emergency funds and labor had not been available. The pine and control area maps are not only of assistance to the crew foremen on Ribes eradication work, but will be helpful in planning and executing future re-examinations of control areas. There still remains 1,672 townships which have not been mapped. However, it is questionable whether 631 of these should be mapped due to the scattered distribution of pine and the small acreage of the units. It is estimated the mapping needed in the other

1,041 townships will require 120,252 man days of labor.

Canker Elimination

Canker elimination work was performed during the period 1932 to 1936 principally on a few publicly-owned areas in four states - Maine, Vermont, New York, and Pennsylvania. (Table 99.) The project in Maine was conducted chiefly at Acadia National Park, where the cankers were removed from infected scenic pines. Technical supervision was, however, given to a few small private jobs in Maine where the owners paid the entire cost of the labor. The project in the three other states was in connection with the elimination of cankers from diseased pines in publicly-owned plantations generally where the percentage of diseased trees exceeded 10%. The canker elimination projects resulted in the examination of 5,621,495 white pines, 125,230 of which were cut down due to fatal stem cankers. An additional 159,062 pines were treated for infection by removing 575,115 branch cankers and 16,912 stem lesions. These accomplishments are due almost entirely to work performed under the Emergency programs since only 3 percent of the total man-days on this project are chargeable to the regular program.

Field Studies

Many field studies have been made to determine the distribution and amount of infection on white pines, blister rust damage to such trees, spread of the disease from definite sources of Ribes, efficiency of Ribes eradication, improvements in control methods, and effectiveness of control. As a result of these studies, the following facts have been ascertained. Commercial protection of local white pine areas from blister rust by the eradication of Ribes within 900 feet is practical and effective. The width of the protection zone can be varied from 600 to 900 feet depending upon topography, species and abundance of Ribes, and density and height of the forest growth surrounding the pine area. Ribes nigrum are instrumental in the long distance spread and local establishment of the rust and should not be grown in pine regions. Blister rust is an insidious disease, the amount of infection and damage frequently being so inapparent to the layman as to cause a false sense of security. Blister rust on white pines is generally distributed throughout the region, the amount of infection depending upon the abundance, species and distribution of Ribes. Generally speaking, little new infection exists in protected areas, except those where the re-eradication work has been delayed too long. On the other hand new infections are occurring in unprotected areas, being especially abundant in sections where Ribes are numerous, as in Pennsylvania. The disease kills white pines of all ages, and damage to merchantable-size trees is becoming increasingly conspicuous in northern New England and northeastern New York. Removal of branch and stem cankers from ornamental white pines is practicable, provided the trunks are not more than 2/3 girdled by the fungus. Such action is not, however, advisable in wooded areas, except in connection with regular pruning operations in young stands or plantations and then it should be limited to removal of infected branches from trees which do not have stem cankers.

Relation of Cost of Control to Value of Pine

Surveys have shown that there are 7,667,127 acres of white pine growth in the Northeastern States with a commercial value estimated at \$315,726,491. The cost of all control activities for all phases of the work by all cooperating agencies during the period 1918 to 1936, inclusive, amounted to \$9,100,185.57. State expenditures represent 22.7 percent of the total, those of local cooperators 10.9 percent, and the federal government 20.4 percent from regular funds and 46.0 percent from Emergency allotments. The total expenditure, however, represents only 2.9 percent of the commercial pine value. In the Northeastern States, the recreational, scenic and watershed protection value of the pine probably equals or exceeds the commercial value. Indirectly the educational and service work of the field personnel has been of great assistance in stimulating general public interest in forestry, especially in the field of protection.

DISTRIBUTION AND ABUNDANCE OF WHITE PINE

NEW ENGLAND AND NEW YORK - 1927

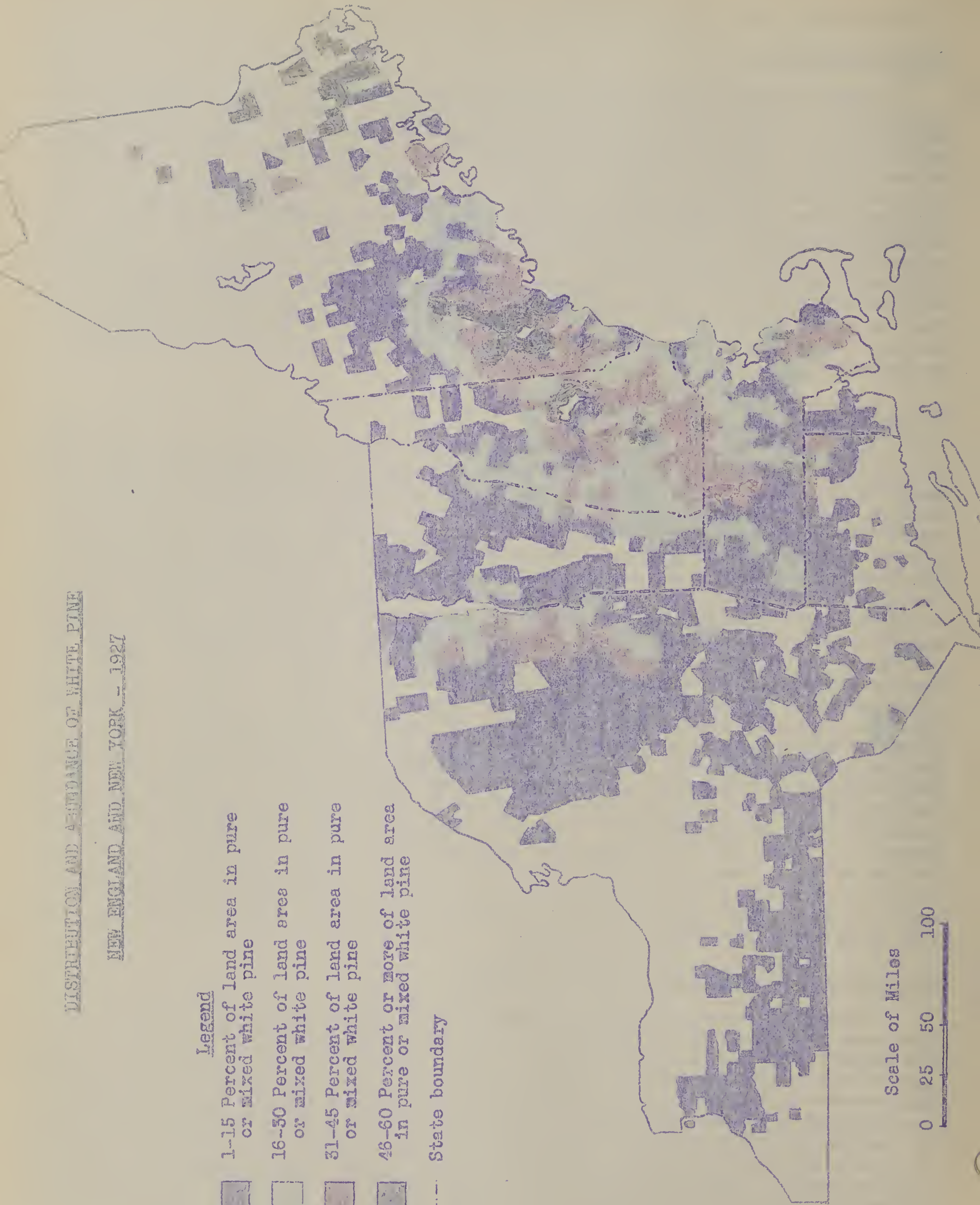
Legend

- 1-15 Percent of land area in pure or mixed white pine
- 16-30 Percent of land area in pure or mixed white pine
- 31-45 Percent of land area in pure or mixed white pine
- 46-60 Percent or more of land area in pure or mixed white pine

State boundary

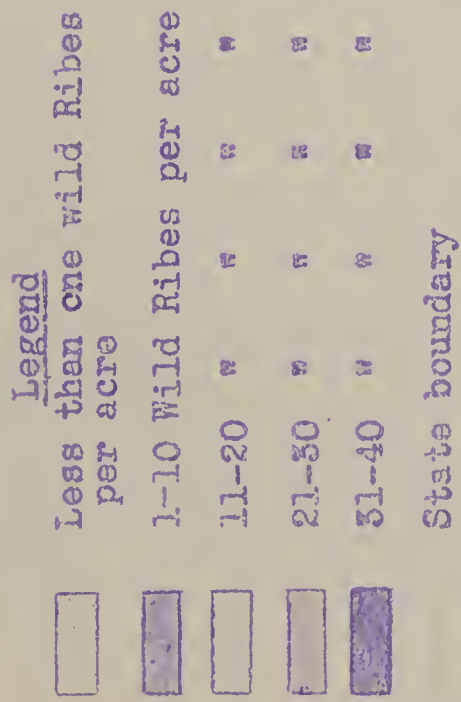
Scale of Miles

0 25 50 100



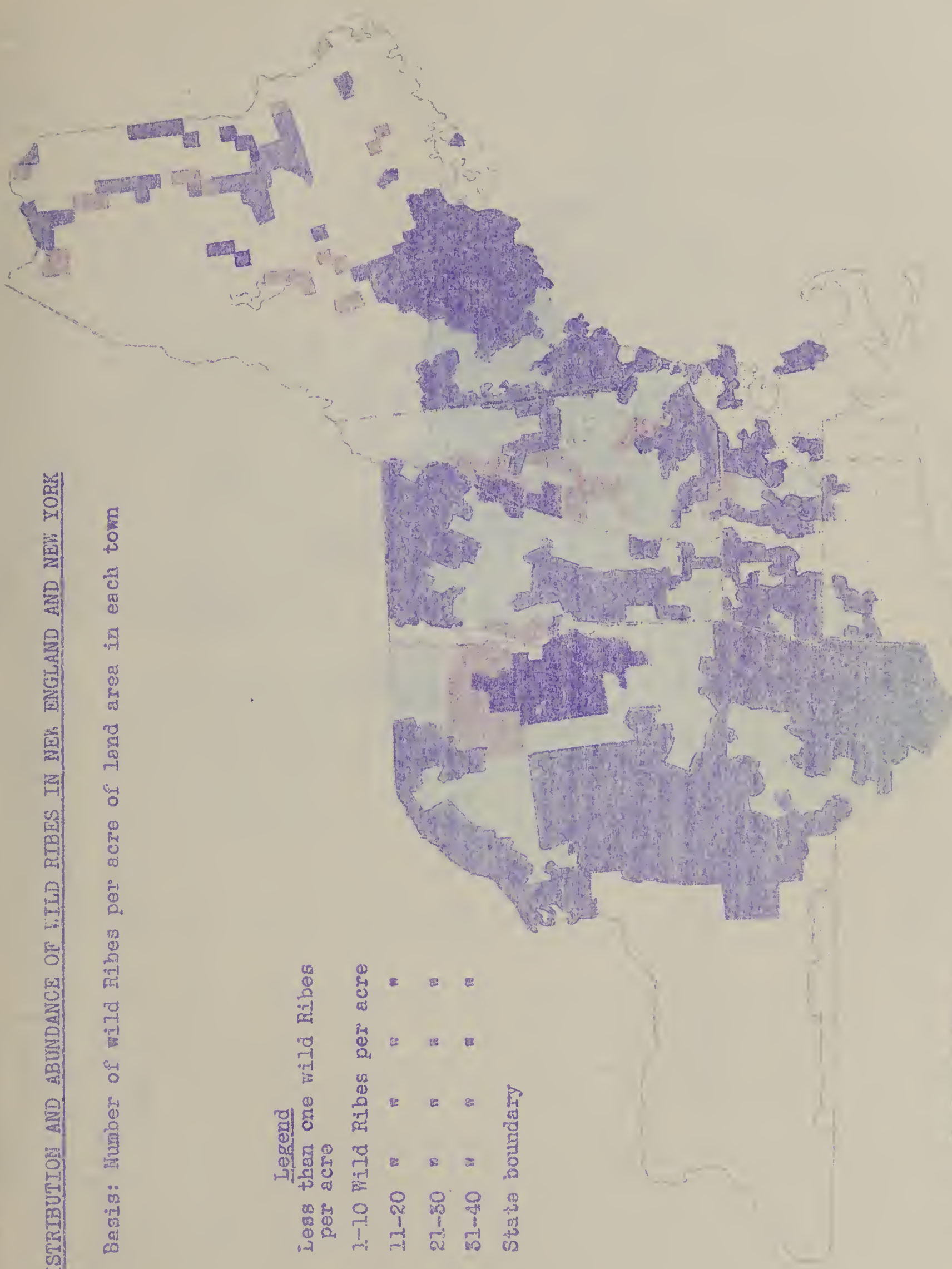
DISTRIBUTION AND ABUNDANCE OF WILD RIBES IN NEW ENGLAND AND NEW YORK

Basis: Number of wild Ribes per acre of land area in each town



Scale of Miles

0 25 50 100

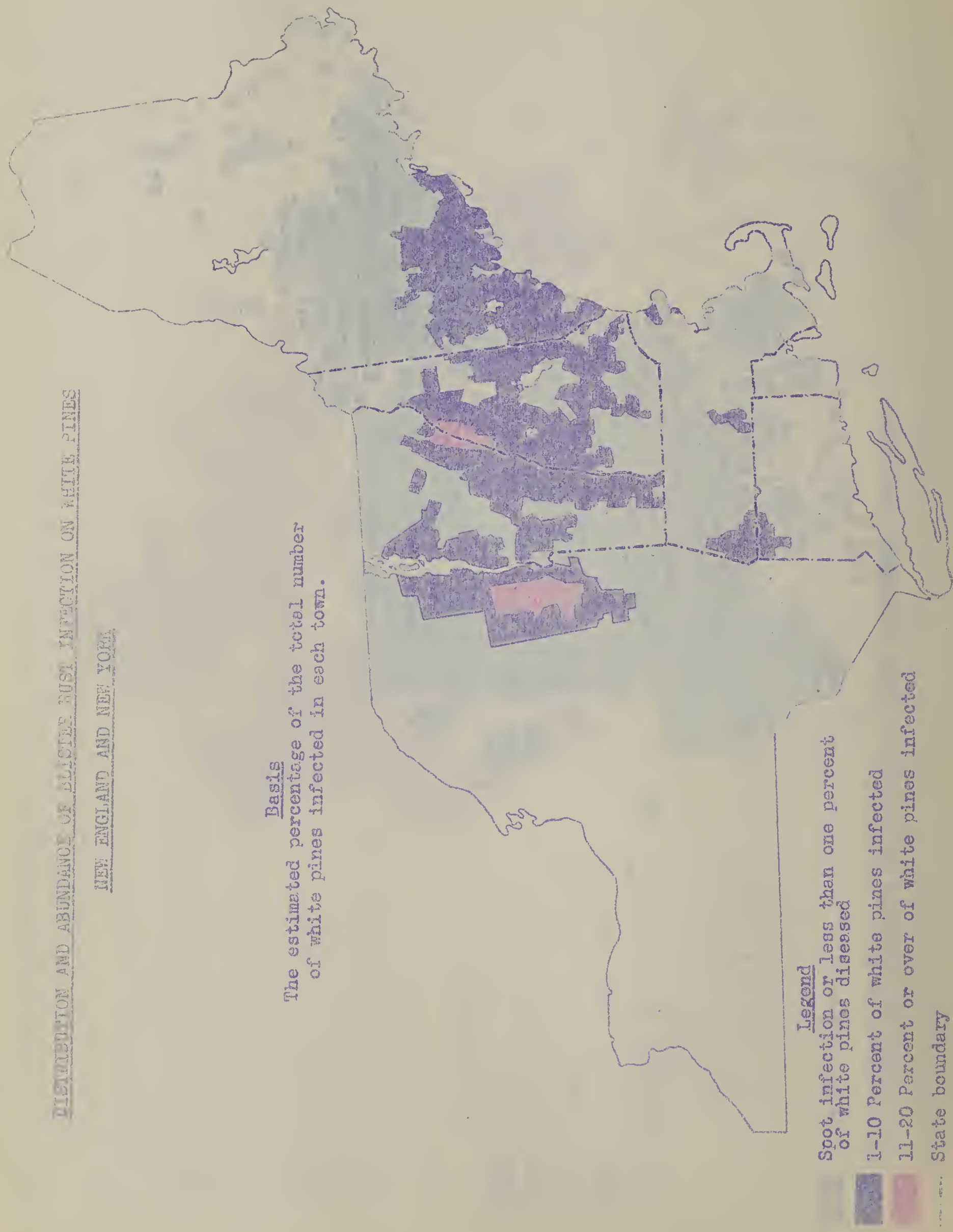


DISTRIBUTION AND ABUNDANCE OF BLISTER RUST INFECTION ON WHITE PINES

NEW ENGLAND AND NEW YORK

Basis

The estimated percentage of the total number
of white pines infected in each town.



Legend

Spot infection or less than one percent
of white pines diseased

1-10 Percent of white pines infected

11-20 Percent or over of white pines infected

State boundary

-4-

BLISTER RUST CONTROL ACTIVITIES UNDER REGULAR COOPERATIVE
CONTROL PROGRAM IN NORTHEASTERN STATES

Policy

During the period 1918 to 1921, inclusive, the Federal Government cooperated with the states in experimental control work on a dollar for dollar basis. This work was conducted in each state under a cooperative agreement between the United States Department of Agriculture and the authorized state regulatory agency, the latter usually being the state forestry department. The control work was directed by the state officials under the general supervision of the Government, which paid a part of the Ribes eradication costs.

In 1922, a new program to secure the general application of control measures was inaugurated by the United States Department of Agriculture in cooperation with the state regulatory agencies and the state extension services. This program has been in operation since that time, but was altered during 1933 to 1936 to include the blister rust control work performed under the various Federal Emergency programs. The object of the regular cooperative work since 1922 has been to accomplish the control of the disease by providing pine owners with the expert advice, leadership, and supervision needed to secure prompt and effective local eradication of Ribes in the pine-growing regions. The Government is primarily responsible for furnishing each cooperating state with one or more trained leaders in control work. In addition, the Government conducts experiments and demonstrations to improve control practices, obtains information on spread of the rust, and gives general supervision and regional leadership. Prior to the advent of the Government Emergency work in 1933, all Federal cooperative expenditures were offset by state expenditures of at least equal amount. The cooperating state regulatory agencies are responsible for the following: (1) the administrative direction of the employees furnished by the Government; (2) cooperation with counties, townships, associations, and individuals in control work; (3) adequate supervision and checking of local eradication of Ribes to secure effective destruction of such bushes; and (4) enforcement of any necessary regulatory measures. The state extension services cooperate, wherever practicable, by making available such facilities of their organizations as will promote the control program.

In New England and New York, this program has been in successful operation since its adoption in 1922; but in Pennsylvania and New Jersey, the control activities were not organized on a similar basis until 1929. There were several reasons for restricting control activities outside New England and New York. The principal ones were the few introductions of diseased nursery stock from Europe, the relatively slow establishment and spread of the rust, the scattered distribution of the white pine, and passive public interest in forestry and lack of adequate state appropriations for control work. Hence, up to 1929, cooperative activities in the East outside New England and New York were limited to a small amount of scouting, nursery sanitation, eradication of new centers of infection, and to investigational and informational work. The natural spread of the disease during the past few years has greatly increased the infested area outside New England and New York. As a result, definite control programs have been adopted in Pennsylvania, New Jersey and other eastern states.

Since 1933, the regular cooperative control work has been necessarily curtailed due to the Emergency programs. The blister rust leaders have given complete supervision to all control activities conducted in their respective districts under the P.W.A., W.P.A., and regular cooperative programs. In addition, they have provided technical supervision for the control work performed under the E.C.W. and other Emergency programs. The number of district leaders in the cooperating states has not been uniform or constant. Generally speaking there has been a gradual curtailment. The blister rust control supervisory personnel employed in the Northeastern States during 1936, except temporary supervisors, is shown in the following chart. As indicated, some of the employees worked part time. In New Hampshire, four district leaders spent only 3/4 of their time on control work, while the state leader in New Jersey worked half time on our project. The cost of these part-time men while on other special duties was paid from state money other than that allotted for the blister rust program.

UNITED STATES SUPPLEMENTARY PERSONNEL IN THE DISTRICT STATES - 1942
 J. B. Snicker - Chief, Washington DC
 J. E. Martin - Post Chief - "

REGIONAL OFFICE - NORTHEASTERN STATES
 E. C. Filler Regional Leader - Cambridge, Mass.
 K. R. Stinson - Adm. Asst. "
 Regular Control Program WPA Control Program

L. W. Hodgkins
 Control Specialist

D. B. Cheyne - Princ. Clerk
 P. L. Rusden - Control Spc.
 M. G. Calderara "

E. C. W. Program

Other Emerg. Programs

MAINE
 W. O. Frost
 State Leader

NEW YORK
 H. L. McIntyre
 State Leader

NEW HAMPSHIRE
 L. E. Newman
 State Leader

MASSACHUSETTS
 C. C. Perry
 State Leader

BELFAST
 H. G. Bradbury
 District Leader

AUBURN
 G. H. Kimball
 District Leader

WARRENSBURG
 N. H. Harpo
 District Leader

SARATOGA SPRINGS
 P. E. Barber
 District Leader

K. E. NE
 F. J. Baker
 District Leader

CONCORD
 T. J. King
 District Leader

N. ABINGTON
 E. M. Brockway
 District Leader

NORTH BARRINGTON
 D. S. Curtis
 District Leader

WATERVILLE
 J. M. White
 District Leader

HYDE PARK
 H. G. Strait
 District Leader

GLOVERSVILLE
 J. W. Charlton
 District Leader

LEBANON
 G. F. Richardson
 District Leader

NORTH CONWAY
 S. H. Boomer
 District Leader

WORCESTER
 Wm. Clavin
 District Leader

POONVILLE
 T. P. Woodschlager
 District Leader

SAND LAKE
 H. J. McCasland
 District Leader

PERU
 H. W. Holcomb
 District Leader

GOVERNEUR
 C. B. Kresge
 District Leader

EXETER
 Temporary Agent

WOODSVILLE
 T. L. Kane
 District Leader

VERMONT
 S. D. Conner
 State Leader

CONNECTICUT
 J. E. Riley
 State Leader

NEW JERSEY
 P. B. Moff
 State Leader

RHODE ISLAND
 A. C. White
 State Leader (acting)

PENNSYLVANIA
 R. P. Fatzinger
 State Leader

RUTLAND
 M. R. Mulholland
 District Leader

ST. JOHNSBURY
 E. H. Palmer
 District Leader

Temporary Personnel
 Assigned as Needed

Temporary Personnel
 Assigned as Needed

Temporary Personnel
 Assigned as Needed

TOWANDA
 T. C. Williams
 District Leader

CLEARFIELD
 P. A. Simmonds
 District Leader

BELLOWS FALLS
 J. H. Rose
 District Leader

BROOKVILLE
 M. J. DeBart
 District Leader

State and
 2 State
 Agents

* Excluding temporary supervisors used on Ribes eradication work.

* part time employee

Informational and Service Activities

Successful informational and service activities by the district leaders are essential to secure the cooperation of individuals and towns in the application of control measures. The informational features are used to create general and favorable attention, interest and desire; while the service work is required to obtain general, prompt, and effective cooperation.

No satisfactory comparison can be made of the volume of the informational and service work performed in the different states since, as stated previously, the number of district leaders in the cooperating states has varied considerably. Table 4 indicates a general decrease in the use of informational features during the past few years. This is due to fewer agents being employed and to the fact that such activities have purposely not been emphasized as strongly as during the early years of the program. The control work has now reached a stage where the chief objective is to retain public interest in maintaining control and this can be accomplished with a reduced volume of informational features. Since 1933, the district leaders activities in connection with the Emergency Programs increased their supervisory duties and resulted in a curtailment of the informational and service work. Such activities were also limited in some of the states because local cooperation was not solicited due to economic conditions and the policy of conducting control work chiefly under the Emergency Programs. In several of the states, the district leaders spent most of their time on mapping work during the winter months since 1933.

In addition to the informational and service work performed by the permanent district blister rust control leaders, the state leaders and temporary state assistants also carried on some activities of this nature. However, no records were kept by the Regional Office of the work in this respect, since these employees did not submit monthly summary reports of their own activities to this office.

Due to a revision of the record system, no report was kept after April 1934 of the number of publications and mimeographed articles or the number of posters and signs placed. Also, the initial interviews and follow-up calls were not classified after this date according to their purpose.

Summaries of the informational and service work performed by the district blister rust control leaders in New England and New York during 1935 and 1936 and for the period 1923-1936, inclusive, are given in Tables 1 to 4, respectively.

Table 1.-Informational Activities Performed in Each of The Northeastern States During 1935 and 1936 by The Permanent District Leaders.

State	Year	Meetings Addressed		Displays Placed	Items Published
		No.	Attendance		
Maine	1935	5	97	1	-
	1936	-	-	2	3
N. H.	1935	60	7,939	42	42
	1936	37	3,472	47	39
Vt.	1935	4	295	7	7
	1936	13	283	13	14
Mass.	1935	11	387	16	36
	1936	17	675	7	13
R. I.	1935	11	530	3	5
	1936	2	55	6	4
N. Y.	1935	65	5,444	29	65
	1936	26	2,523	3	35
Penna.	1935	-	-	-	-
	1936	1	40	6	4
Totals	1935	156	14,692	98	155
	1936	96	7,048	84	112

Table 2.-Service Activities Performed in Each of The Northeastern States During 1935 and 1936 by The Permanent District Leaders

State	Year	Initial Interviews	Follow-up Calls	Personal Instruction
				in Field (No. Individuals)
Maine	1935	311	199	26
	1936	209	131	140
N.H.	1935	1,418	1,506	842
	1936	693	974	532
Vt.	1935	238	34	131
	1936	728	430	476
Mass.	1935	960	584	281
	1936	730	404	170
R. I.	1935	128	137	7
	1936	60	52	11
N. Y.	1935	1,145	869	966
	1936	819	412	893
Penna.	1935	283	76	-
	1936	91	4	44
Totals	1935	4,483	3,405	2,253
	1936	3,330	2,407	2,266

Table 3.-Summary, By States, of Informational and Service Activities Performed by Permanent and Temporary District Blister Rust Control Leaders in New England and New York During The Period 1923-1936, Inclusive.

Informational

State	Maine	N.H.	Vt.	Mass.	R.I.	Conn.	N.Y.	Totals
Meetings Addressed (1)	1,299	2,717	784	910	219	78	1,421	7,428
Attendance (1)	30,416	140,305	23,376	32,245	17,222	2,633	98,093	344,290
Displays Placed (2)	1,015	1,856	589	812	108	141	523	5,044
Publications Distributed (3)	65,652	183,853	30,653	150,907	35,331	12,155	133,570	612,121
Mimeo. Articles Dist. (3)	4,846	64,465	192	2,445	2,250	91	3,595	77,884
Items Published	577	3,670	478	2,060	390	641	2,257	10,073
Posters & Signs Placed (3)	18,802	19,837	7,561	3,116	2,104	569	9,049	61,038

(1) Includes "Field Demonstration Meetings".

(2) Includes "Roadside Demonstrations".

(3) No record kept of this item after April, 1934.

In addition, during the period July 1 to December 31, 1922, the following general informational work was performed: 251 meetings addressed with an attendance of 29,165 persons, 335 field demonstration meetings attended by 1,732 individuals, 374 displays placed, 35,067 publications distributed, 313 items published and 2,500 posters and signs placed.

Service

State	Maine	N.H.	Vt.	Mass.	R.I.	Conn.	N.Y.	Totals
Initial Interviews	28,458	28,773	10,946	31,744	3,215	4,076	24,541	131,753
Follow-Up Calls	9,646	25,745	7,136	11,661	2,661	3,033	18,641	72,123
Persons Instructed in Field	19,940	18,035	8,752	11,874	585	1,533	16,612	77,531

During the period July 1 to December 31, 1922, an additional 6,227 initial interviews and 1,924 follow-up calls were made, and 1,540 individuals received personal instructions in the field.

Table 4. Summary of Monthly Informational and Service Activities Performed by Permanent and Temporary Blister Rust Control Agents in New England and New York During Period 1923-1936, Inclusive.

Informational

Year	Meetings Addressed		Field Dem. Meetings		Displays Placed	Publications Dist.	Mimeo. Articles Dist.	Items Pub.	Posters & Signs Placed	Road Dem. Placed
	No.	Attendance	No.	Attendance						
1923	722	32,649	834	5,442	582	51,308	-	1,203	6,499	-
1924	707	47,071	792	4,050	647	55,696	-	1,269	9,553	-
1925	627	45,522	418	2,912	680	68,818	-	1,294	8,894	-
1926	490	33,082	210	5,018	624	76,697	-	1,202	8,056	-
1927	467	34,690	148	2,646	647	88,840	-	1,219	7,041	-
1928	363	21,178	159	2,809	492	62,708	14,953	1,109	7,268	-
1929	204	23,729	70	1,898	358	62,332	23,155	769	4,388	-
1930	144	8,275	44	1,022	215	48,124	20,715	518	3,445	127
1931	95	7,852	30	840	109	36,068	9,165	372	2,922	81
1932	233	18,107	38	571	67	39,562	6,416	340	1,758	54
1933	235	12,047	41	819	50	27,691	3,435	333	1,129	31
1934	95	10,259	(1) 11	102	104	4,277 (2)	45 (2)	182	85 (2)	-(3)
1935	153	14,692	-	-	98	-	-	155	-	-
1936	93	7,008	-	-	78	-	-	108	-	-
Total	4,533	316,161	2,795	28,129	4,751	612,121	77,884	10,073	61,038	293

(1) Included with "Meetings Addressed" after April, 1934.

(2) No record kept of this item " " "

(3) Included with "Displays Placed" " " "

In addition, during the period July 1 to December 31, 1922, the following general informational work was performed: 251 meetings addressed with an attendance of 29,163 persons, 335 field demonstration meetings attended by 1,732 individuals, 374 displays placed, 36,067 publications distributed, 313 items published and 2,500 posters and signs placed.

Service

Year	Initial Interviews	Follow-Up Calls	Persons Instructed in Field
1923	14,724	5,555	4,274
1924	15,984	6,804	6,198
1925	13,819	7,380	11,169
1926	12,153	7,309	11,559
1927	13,120	8,228	13,102
1928	15,644	8,625	8,952
1929	9,013	6,503	6,741
1930	7,905	5,568	3,166
1931	5,789	5,440	2,070
1932	6,996	4,968	1,884
1933	4,788	3,744	1,818
1934	4,379	2,667	2,123
1935	4,200	3,329	2,253
1936	3,239	2,403	2,222
Total	131,753	78,523	77,531

During the period July 1 - December 31, 1922, an additional 6,227 initial interviews and 1,540 follow-up calls were made, and 1,540 individuals received personal instructions in the field.

Cooperation

The informational and service activities have resulted in excellent public participation in blister rust control as evidenced by local cooperators making available \$1,007,410.40 for such work up to and including 1936. However, only \$992,134.10 of this amount was actually expended, the balance reverting to the contributors. All of the local funds were used on the regular control program except \$27,419.69 which were spent in connection with Federal Emergency activities. During the period 1918 to 1936, inclusive, 41,682 individual cooperators expended \$476,635.11 and expenditures of \$506,611.75 and \$8,887.24, respectively, were made from 1,891 town allotments and 33 county subscriptions. The individual cooperators actually furnished labor, or its equivalent in money, to eradicate the Ribes on their properties. Thousands of additional owners permitted the destruction of 864,869 cultivated Ribes without compensation. In addition to the above direct cooperation, thousands of individuals gave general support or personal aid to the control program. State expenditures, other than local cooperation, amounted to \$2,063,378.47, of which \$126,740.52 was spent on Federal Emergency programs.

Public interest and participation in blister rust control has been continued in the Northeastern States in spite of the depression and Federal Emergency programs. Naturally during recent years there has been a decided decrease in the amount of local cooperation. This may be attributed chiefly to the fact that because of financial conditions and availability of Emergency funds little effort was made to secure such assistance, except to transport WPA crews. Town cooperation reached high peaks in 1930 and 1931. In Maine 51 towns appropriated \$9,350 for control work in 1936, compared with 26 appropriations of \$5,300 in 1935. Tentative reports show that at the annual town meetings during March 1937, 63 towns in Maine and 56 towns in New Hampshire appropriated \$11,200 and \$14,425, respectively, for blister rust control. In 1932, during the worst year of the depression, individuals actually expended more money on Ribes eradication than during the preceding year. Expenditures by 4,645 individual owners during the past four years has amounted to \$22,196.26, even though no special efforts were made to secure such cooperation. Only three of the Northeastern States decreased state appropriations for control work during recent years. In New York, state funds were reduced from \$60,000 to \$51,500 in 1935. While substantial reductions occurred in New Hampshire and Massachusetts, the 1937 budgets for these states provide for the restoration of state funds comparable to pre-depression days.

Individual cooperation in wild Ribes eradication has been solicited in all the Northeastern States, except New Jersey. However, such efforts have been restricted in New Hampshire where the work is performed chiefly in cooperation with towns, in Maine since 1930 for a similar reason, and in Rhode Island where, except during 1920, state funds have been used to pay the entire cost of the limited amount of regular control work.

Town cooperation in connection with the regular control program has been obtained chiefly in New Hampshire, Maine, and Connecticut. However, some town funds have also been provided in Vermont and Massachusetts. In New Hampshire, 1,202 town appropriations, excluding those of 1937, have made available \$378,295.00 for control work. This amount represents over 75 percent of the total town money raised in New England since 1918. Many of the New Hampshire towns have consistently made yearly appropriations until their entire pine areas have been protected. In fact, initial control work has been completed in 155 New Hampshire towns. The town money in New Hampshire and Connecticut is turned over to the respective states and expended with additional state funds to clear definite town blocks of Ribes, irrespective of property lines.

In Maine, town cooperation has been obtained since 1921; 590 town appropriations making available \$107,750.96 for regular control work excluding 1937. Up to 1931, this town money, except for a few thousand dollars, was used to employ town foremen who aided the individual owners in eradicating Ribes concentrations on their properties. A revised state policy was inaugurated in Maine in 1931 whereby the town funds were used to employ crews, as in New Hampshire, and the control areas were systematically worked irrespective of property lines, the state paying one-third of the costs of eradicating the Ribes. The 14 town appropriations in Vermont, totaling \$1,422.75, have been used chiefly to pay the excess labor cost of foremen working with individual owners; but in one instance, a part of the money was spent in eradicating the Ribes on a town forest. Town money was secured in Massachusetts only during 1920 and 1921, when four appropriations, totaling \$1,700 were made for control work in Berkshire County. The town contributions, other than appropriations, in the Northeastern States during 1935 and 1936 totaled \$18,372.59. All but \$120. of this amount was spent on the WPA program chiefly for transportation.

1935 and 1936

*Transportation of WPA crews.

1922 - 1936

Maine	621	10,442	82,327.54	590	10	107,750.96	594.39	96,906.13
N.H.	-	542	39,466.20	1,040	8	352,260.00	347.75	350,209.80
Vt.	172	2,071	67,188.26	14	19	1,422.75	9,711.75	10,909.66
Mass.	10,188	10,747	87,907.29	-	15	-	6,872.70	6,872.70
R.I.	-	2	31.36	-	-	-	-	-
Conn.	195	291	8,329.69	25	4	14,346.75	846.00	14,957.89
N.Y.	-	5,810	157,293.77	-	-	-	-	-
Penna.	12	226	1,849.28	-	-	-	-	-
Totals	11,188	30,131	444,393.19	1,669	56	475,780.46	18,372.59	479,945.10

1918 - 1936

Line	621	10,472	83,490.41	590	10	107,750.96	594.39	96,906.10
H.	-	684	47,563.76	1,202	8	378,295.00	347.75	375,256.15
t.	172	2,132	71,209.37	14	19	1,422.75	9,711.75	10,909.68
SS.	10,188	10,828	93,891.39	4	15	1,700.00	6,872.70	8,571.52
	-	8	581.36	-	-	-	-	-
CON.	195	293	8,729.69	25	4	14,346.75	826.00	14,937.37
	-	5,851	169,319.85	-	-	-	-	-
CON.	12	228	1,939.28	3	13	-	-	-
SS.	11,123	30,494	76,835.11	1,835	56	505,515.46	10,372.68	505,371.78

Table 6.-Local Cooperation in Blister Rust Control Work in Northeastern States
1918-1936, Inclusive

Year	Individual Cooperation			Town Cooperation			County Cooperation		
	No. Cooperators		Amount Spent by Individual Cooperators	No. Towns		Amount Town Money		No. County Allotments	Amount County Funds Expended
	Cult. Ribes Erad. Only	Wild & Cult. Ribes Erad.		Approp- riations	Contribu- tions	Appropri- ated	Contribu- ted		
1918	-	19	4,188.63	43	-	7,200.00	-	-	5,029.11
1919	-	50	6,645.74	38	-	6,310.00	-	-	7,907.31
1920	-	152	8,498.78	51	-	8,675.00	-	-	7,992.09
1921	-	142	12,908.77	34	-	5,550.00	-	-	5,827.06
1922	-	971	28,035.13	58	-	20,598.29	-	-	18,448.62
1923	664	1,968	40,969.47	121	-	39,530.00	-	-	40,150.59
1924	1,714	3,050	44,622.07	151	-	48,429.25	-	-	48,898.50
1925	958	3,069	39,720.06	132	-	40,975.00	-	-	40,351.31
1926	741	3,283	44,254.88	123	-	40,425.00	-	-	41,223.95
1927	834	3,537	49,040.81	125	-	38,127.00	-	-	38,299.74
1928	991	3,390	54,667.68	143	-	41,117.00	-	-	39,038.73
1929	1,019	3,364	49,785.39	156	-	41,385.23	-	-	41,323.28
1930	971	2,419	32,999.65	186	-	48,143.50	-	-	46,880.12
1931	758	1,172	18,592.61	175	-	48,399.00	-	-	47,455.36
1932	313	1,488	19,509.18	81	-	19,217.09	-	-	19,575.96
1933	463	854	8,944.07	55	-	11,615.10	-	-	11,414.04
1934	1,331	774	8,687.68	13	-	4,574.00	-	-	4,573.93
1935	411	491	3,258.31	66	25	16,095.00	4,243.92	1	20,198.37
1936	20	301	1,306.20	84	31	17,150.00	14,128.67	2	22,023.68
Totals	11,186	30,494	476,635.11	1,835	56	503,515.46	18,372.59	33	506,611.75
									8,887.24

In addition, 5 individuals in New Hampshire expended \$42.85 on control work during 1917.

A small amount of county money was expended in New York prior to 1929, but it was reported under "individual cooperation".

Results Accomplished in Blister Rust Control under
Regular Cooperative Program in the Northeastern States

Ribes Eradication

Experimental control work in New England and New York during period 1918 to 1921, inclusive, resulted in 1,042,273 acres being cleared of 15,002,878 wild Ribes and 91,725 cultivated bushes at an average cost of 41 cents per acre. The cost per acre was reduced from 73 cents in 1918 to 24 cents in 1921. In the application of control measures under the Regular cooperative program since that time, an additional area of 9,188,527 acres in the Northeastern States was eradicated of 89,581,998 wild and 533,964 cultivated Ribes at a per acre cost of 19.9 cents. This acreage includes, however, 1,208,414 acres reworked since 1922 at a cost of 18.1 cents per acre. Therefore, under the Regular program up to 1936, inclusive, control of blister rust had been established on 9,022,386 acres (pine areas plus protection zones), and in connection with maintenance of control 11.8%, or 1,208,414 acres had been reworked. This combined work resulted in the destruction of 104,584,876 wild and 625,689 cultivated bushes.

The results since 1922 were dependent upon the amount of local cooperation secured by the district leaders and funds provided by the cooperating states. State scouts were used to determine the location and abundance of Ribes chiefly in those townships where local cooperation had been obtained. In sections where the bushes were few, they were destroyed by the state scouts; those portions containing a general distribution or abundance of Ribes were definitely indicated as requiring crew work. The cost of such crew work was paid by the local cooperators and the state, the latter usually furnishing foremen to direct the activities of the laborers provided by the local cooperators. The standard eradication crew used on the Regular program consisted of five laborers and a foreman. However, in the case of individual cooperation, the owner frequently was unable to provide a full-size crew; consequently, many jobs were worked with crews of smaller size. In those townships where local cooperation had not been solicited or obtained, only a limited amount of control work was performed prior to the advent of the Emergency programs.

The low cost per acre under the Regular program may be attributed to the following facts. The best qualified men available, other than owners' labor, could be selected for foremen and crew members and usually these men were experienced in control work. These workers spent eight hours per day in the field and were usually accustomed to woods work. A considerable portion of the control area was worked by experienced scouts rather than crews as was necessary under the Emergency programs. Also, many of the Ribes concentrations were not worked until the advent of the Emergency activities.

The results accomplished in Ribes eradication work under the Regular program in each of the Northeastern States are shown in Tables 7 to 13. The increase in per acre costs during 1936 may be attributed chiefly to the comparatively small acreage protected and to a greater abundance of Ribes. As indicated in Table 7, there is a marked decrease in the number of Ribes and cost per acre between the initial and reeradication work. However, the comparison is faulty, due to the fact that the same areas are not involved.

Prior to 1934, no record was kept of "men days" for the Ribes eradication work under the Regular Cooperative Program in the Northeastern States. In this report, the man days data, for the period 1918-1933, were compiled for each state by dividing the total cost of the Ribes eradication work by an arbitrary daily wage rate of \$5.20.

Table 7- Summary of Ribes Eradication Work Performed Under Regular Cooperating Program in the Southern States During 1935 and 1936 (Excludes nursery sanitation and other current elimination)

1935

State	Type of Work	Acreage		Ribes Pulled		Total Man Days	Total Cost		Per Acre		
		Total	Pine Protected	Wild	Cult		Local Coop.	State	Cost	Ribes	Man Days
Maine	Initial	6,115	2,366	224,336	188	1,089	2,878.01	912.32	3,790.33	56.7	0.18
	Re-Erad.	6,747	3,242	125,035	53	1,095	2,462.79	1,221.08	3,683.87	18.5	0.16
	Total	12,862	5,608	349,371	241	2,184	5,340.80	2,133.40	7,474.20	27.2	0.17
N.H.	Initial	19,231	9,687	589,428	-	2,537	6,791.71	2,098.59	8,890.30	30.6	0.13
	Re-Erad.	15,001	7,588	255,659	-	1,503	4,431.83	1,332.90	5,764.73	17.0	0.10
	Total	34,232	17,275	845,087	-	4,040	11,223.54	3,431.49	14,655.03	24.7	0.12
Mass.	Initial	4,074	2,215	4,601	322	92	135.30	235.89	371.19	1.1	0.02
	Re-Erad.	31,287	13,800	31,503	1,045	677	759.90	2,209.83	2,969.73	1.0	0.02
	Total	35,361	16,015	36,104	1,367	769	895.20	2,445.72	3,340.92	1.0	0.02
N.Y.	Initial	26,965	17,976	169,777	758	1,776	991.95	6,905.87	7,897.82	6.3	0.07
	Re-Erad.	30,349	20,232	75,979	170	1,265	364.62	4,900.85	5,265.47	2.5	0.04
	Total	57,314	38,208	245,756	928	3,041	1,356.57	11,806.72	13,163.29	4.3	0.05
Penn.	Initial	55	11	2,805	-	53	-	166.20	166.20	51.0	0.96
	Re-Erad.	582	215	94,047	-	281	-	988.10	988.10	161.6	0.48
	Total	637	226	96,852	-	334	-	1,154.30	1,154.30	152.0	0.52
Totals	Initial	56,440	32,255	990,947	1,268	5,547	10,796.97	10,318.87	21,115.84	17.6	0.10
	Re-Erad.	83,966	45,077	582,223	1,268	4,821	8,019.14	10,652.76	18,671.90	6.9	0.06
	Total	140,406	77,332	1,573,170	2,536	10,368	18,816.11	20,971.63	39,787.74	11.2	0.07

1936

Maine	Initial	756	73	27,288	-	158	399.15	-	399.15	528	36.1	0.21
	Re-Erad.	360	83	11,049	299	60	200.00	-	200.00	556	30.7	0.17
	Total	1,116	156	38,337	299	218	599.15	-	599.15	537	34.4	0.20
N.H.	Initial	7,483	3,950	165,677	190	1,026	2,546.76	642.66	3,189.42	426	22.1	0.14
	Re-Erad.	15,521	8,650	183,543	69	2,030	4,856.70	1,239.29	6,095.99	393	11.8	0.13
	Total	23,004	12,600	349,220	259	3,056	7,403.46	1,881.95	9,285.41	404	15.2	0.13
Mass.	Initial	-	-	-	-	-	-	-	-	-	-	-
	Re-Erad.	-	-	-	-	-	-	-	-	-	-	-
	Total	-	-	-	-	-	-	-	-	-	-	-
N.Y.	Initial	3,674	2,450	15,101	30	155	-	696.37	696.37	190	4.1	0.04
	Re-Erad.	6,331	4,220	56,692	101	308	-	1,163.23	1,163.23	184	9.0	0.05
	Total	10,005	6,670	71,793	131	463	-	1,859.60	1,859.60	186	7.2	0.05
Penn.	Initial	874	234	467,345	-	782	-	2,430.48	2,430.48	2,781	534.7	0.89
	Re-Erad.	-	-	-	-	-	-	-	-	-	-	-
	Total	874	234	467,345	-	782	-	2,430.48	2,430.48	2,781	534.7	0.89
Totals	Initial	12,787	6,707	675,411	220	2,121	2,945.91	3,769.51	6,715.42	525	52.8	0.17
	Re-Erad.	22,212	12,953	251,284	469	2,398	5,056.70	2,402.52	7,459.22	336	11.3	0.11
	Total	34,999	19,660	926,695	689	4,519	8,002.61	6,172.03	14,174.64	405	26.5	0.13

Basis of Costs: Same as indicated under Table 11.

Table 8 - Initial Ribes Eradication Work Performed Under Regular Cooperative Program In Northeastern States During Period 1918-1936, Inclusive.
(Excludes Nursery Sanitation and Cultivated Black Currant Elimination)

State	Total Acreage Worked	Ribes Pulled		Total Man Days	Total Cost	Per Acre		
		Wild	Cult.			Cost	Ribes	Days
Maine	2,765,208	19,944,286	118,455	74,652	239,052.17	.086	7.2	.03
N. H.	2,759,991	38,180,793	111,186	182,104	583,752.47	.212	13.8	.07
Vt.	191,899	2,136,926	10,286	26,286	84,115.55	.438	11.1	.11
Mass.	1,783,033	13,038,190	238,367	86,926	278,253.08	.156	7.3	.06
R. I.	273,179	190,069	12,281	9,428	30,165.64	.110	0.7	.03
Conn.	229,550	1,611,118	18,576	16,754	53,610.65	.234	7.0	.07
N. Y.	954,475	19,890,788	58,569	228,164	736,110.49	.771	20.8	.21
Penna.	64,885	3,301,804	5,477	10,119	32,298.91	.498	50.9	.13
Totals	9,022,220	98,293,974	603,197	634,433	2,037,388.96	.226	10.9	.07

Table 9 - Ribes Re-Eradication Work Performed Under Regular Cooperative Program In Northeastern States During Period 1918-1936, Inclusive.
(Excludes Nursery Sanitation And Cultivated Black Currant Elimination)

State	Total Acreage Re-Examined	Ribes Pulled		Total Man Days	Total Cost	Per Acre		
		Wild	Cult.			Cost	Ribes	Days
Maine	71,158	931,124	1,912	5,955	19,139.99	.269	13.1	.08
N. H.	411,787	2,547,746	3,440	19,149	61,594.30	.150	6.2	.05
Vt.	32,627	159,163	833	3,336	10,671.76	.327	4.9	.16
Mass.	470,277	807,597	9,408	13,583	44,740.11	.095	1.7	.02
R. I.	16,885	10,406	75	646	2,072.71	.123	0.6	.01
Conn.	36,161	448,596	3,706	6,939	22,654.93	.627	12.4	.19
N. Y.	159,089	901,834	3,093	14,056	48,786.12	.307	5.7	.07
Penna.	10,596	484,436	25	2,741	8,947.68	.844	45.7	.15
Totals	1,208,580	6,290,902	22,492	66,405	218,607.60	.181	5.2	.05

Basis of Costs: Same as indicated under Table 11.

Table 10-Summary of Initial and Re-Eradication Work Performed Under The Regular Cooperative Program in Northeastern States During Period 1918-1936, Inclusive
(Excludes nursery sanitation and cultivated black currant elimination projects)

Year	Total Acreage Worked	Ribes Pulled		Total Man Days	Total Cost	Per Acre		
		Wild	Cult.			Cost	Ribes	Man Days
1918	137,458	2,413,887	22,150	31,207	99,863.40	.727	17.6	.23
1919	252,043	4,549,948	27,877	43,595	139,500.56	.553	18.1	.17
1920	270,318	4,301,940	26,936	29,271	93,662.74	.346	15.9	.11
1921	382,454	3,737,103	15,762	29,027	92,885.96	.243	9.8	.08
1922	475,217	4,849,812	16,061	30,257	96,818.65	.204	10.2	.06
1923	892,639	7,969,917	55,074	50,277	160,883.87	.180	8.9	.06
1924	1,012,986	9,527,787	73,858	53,102	169,927.90	.168	9.4	.05
1925	834,894	7,346,289	59,458	43,376	138,802.49	.166	8.8	.05
1926	815,187	8,858,071	51,471	46,417	148,537.83	.182	10.9	.06
1927	899,852	8,046,826	49,745	48,631	155,618.55	.173	8.9	.05
1928	883,712	6,680,001	60,561	50,421	161,347.40	.183	7.6	.06
1929	932,787	7,666,890	76,450	55,951	179,043.04	.192	8.2	.06
1930	712,229	8,186,105	30,962	49,895	159,665.95	.224	11.5	.07
1931	578,291	7,174,121	21,978	49,950	159,839.84	.276	12.4	.09
1932	544,620	4,786,326	25,091	39,057	124,983.41	.229	8.8	.07
1933	283,514	3,845,543	7,340	23,231	74,341.79	.262	13.6	.08
1934	147,194	2,144,445	2,690	12,286	46,310.80	.315	14.6	.08
1935	140,406	1,573,170	2,536	10,368	39,787.74	.283	11.2	.07
1936	34,999	926,695	689	4,519	14,174.64	.405	26.5	.13
Total	10,230,800	104,584,876	625,689	700,838	2,255,996.56	.221	10.2	.07

Table 11-Recapitulation of Total Costs of Ribes Eradication Work Under Regular Cooperative Program in Northeastern States During Period 1918-1936, Inclusive.

Year	Individuals	Towns	State	Govt.	Counties	Total
1918	4,188.63	5,029.11	36,970.29	53,675.37	-	99,863.40
1919	6,645.74	7,907.31	45,871.64	79,075.87	-	139,500.56
1920	8,498.78	7,992.09	18,403.73	58,768.14	-	93,662.74
1921	12,908.77	5,827.06	38,886.52	35,263.61	-	92,885.96
1922	28,035.13	16,898.68	48,683.94	3,200.90	-	96,818.65
1923	40,969.47	40,150.59	76,951.28	2,812.53	-	160,883.87
1924	44,622.07	48,898.50	71,804.15	4,603.18	-	169,927.90
1925	39,720.06	40,351.31	56,251.26	2,479.86	-	138,802.49
1926	44,172.88	41,223.95	60,304.66	2,836.34	-	148,537.83
1927	49,040.81	38,299.74	64,765.56	3,512.44	-	155,618.55
1928	54,667.68	39,038.73	64,329.47	3,311.52	-	161,347.40
1929	49,785.39	41,323.28	82,972.66	4,127.81	833.90	179,043.04
1930	31,130.24	46,880.12	72,270.65	8,272.84	1,112.10	159,665.95
1931	17,746.57	47,455.36	85,896.02	6,041.97	2,699.92	159,839.84
1932	18,113.90	19,568.23	78,448.22	7,600.18	1,252.88	124,983.41
1933	8,472.67	11,145.59	52,728.27	1,300.77	694.49	74,341.79
1934	3,833.98	2,649.93	38,945.54	-	881.35	46,310.80
1935	2,436.06	15,954.45	20,971.63	-	425.60	39,787.74
1936	107.60	7,895.01	6,172.03	-	-	14,174.64
Total	465,096.43	484,489.04	1,021,627.52	276,883.33	7,900.24	2,255,996.56

Basis of costs: Includes actual cost or value of owners' labor, usually figured at 40¢ per hour; and actual cost of other laborers, scouts and crew foremen while engaged in locating and pulling Ribes; cost of crew transportation; and miscellaneous expenses for trail paper, picks, etc.

AMOUNT OF COOPERATIVE FUNDS EXPENDED EACH YEAR FOR RIBES ERADICATION WORK
ON REGULAR BLISTER RUST CONTROL PROGRAM IN NORTHEASTERN STATES
1918 TO 1936, INCLUSIVE

Thousands
Of Dollars
200

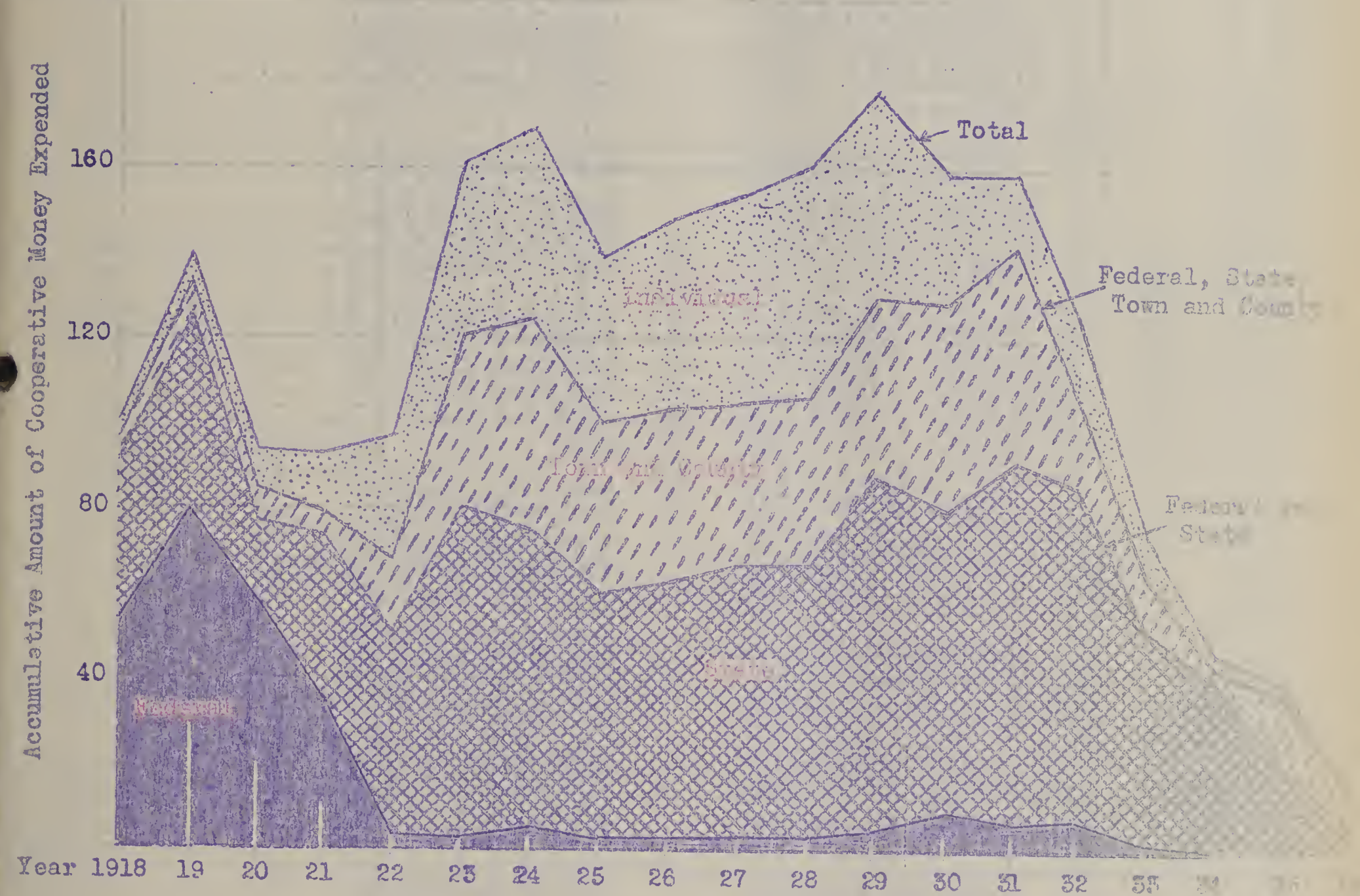


Table 12. Initial and Re-Banding Cost Performance Under Regular Cooperative Program in Each of the Northeastern States
(Excludes nursery sanitation and cultivated black currant elimination)

1922-1936, Inclusive

State	Total Acreage Examined	Ribes Pulled		Total Man Days	Cost				Total	Per Acre	
		Wild	Cult.		Indiv.	Towns & Counties	State	Gov't.			
Maine	2,655,736	20,216,681	118,788	74,448	81,014.52	95,453.56	26,989.08	35,026.86	238,484.02	.090	7.6
N.H.	2,600,873	34,392,849	83,109	163,396	39,293.92	349,014.11	134,350.95	1,547.25	524,206.23	.202	13.2
Vt.	206,548	2,023,946	10,837	25,168	67,102.01	1,077.91	11,281.17	1,073.71	80,534.80	.390	9.3
Mass.	2,171,433	11,430,914	237,430	86,548	79,860.29	-	197,178.25	1,279.75	278,318.29	.128	5.3
R.I.	186,803	119,233	8,105	4,836	31.36	-	13,612.64	1,832.80	15,476.80	.083	0.6
Conn.	252,241	1,934,451	22,274	21,392	7,146.08	12,187.89	42,327.15	7,242.35	68,903.47	.273	7.7
N.Y.	1,039,412	15,677,584	47,919	179,090	157,039.50	7,900.24	417,958.96	15.00	582,913.70	.561	15.1
Penna.	75,481	3,786,240	5,502	12,860	-	-	37,797.14	2,082.62	41,246.59	.546	50.2
Totals	9,188,527	89,581,998	533,964	567,738	452,854.51	465,633.71	881,495.34	50,100.34	1,830,083.90	.199	9.7

1918-1936, Inclusive

Maine	2,836,366	20,875,410	120,367	80,607	82,177.59	95,453.56	33,044.91	47,516.10	258,192.16	.091	7.4
N.H.	3,171,778	40,728,539	144,626	201,253	47,391.48	374,070.46	162,962.58	60,932.25	645,346.77	.203	12.8
Vt.	224,526	2,296,089	11,119	29,622	71,123.12	1,077.91	16,439.13	6,147.15	94,787.31	.422	10.2
Mass.	2,253,310	13,845,787	247,775	100,509	85,844.39	1,699.22	212,342.65	23,106.93	322,993.19	.143	6.1
R.I.	290,064	200,475	12,356	10,074	581.36	-	21,064.21	10,592.78	32,238.35	.111	0.7
Conn.	265,711	2,059,714	22,282	23,693	7,546.08	12,187.89	46,940.17	9,591.44	76,265.58	.287	7.8
N.Y.	1,113,564	20,792,622	61,662	242,220	169,065.58	7,900.24	491,046.73	116,914.06	784,926.61	.705	18.7
Penna.	75,481	3,786,240	5,502	12,860	1,366.83	-	37,797.14	2,082.62	41,246.59	.546	50.2
Totals	10,230,800	104,584,876	625,689	700,838	465,096.43	492,389.28	1,021,627.52	276,883.33	2,255,996.56	.221	10.2

*County funds

Basis of Costs: Same as indicated in Table 11.

Federal Projects on Government Lands - Regular Cooperative Program

Control measures under the regular program have been applied on the white pine areas of the National Forests and Parks in the Northeastern States where the pine is of sufficient value to justify the cost of protection. Up to 1933, such work was conducted as a regular federal project, the Bureau of Plant Industry cooperating with the National Forest and Park Services. With the exception of a small project on the Allegheny National Forest, all control work on Government owned lands in the Northeastern States since 1933 has been performed under the E.C.W. program.

The project at Acadia National Park in Maine was begun in 1929 and has been continued each succeeding year. All control work at this Park during 1933-1936 was performed by crews from the two local C.C.C. camps. The initial control project is practically completed and about 1/3 of the area has been reworked. Plans have been made to continue the work with E.C.W. labor during 1937.

With the exception of recent acquisitions, all white pine areas on the White Mountain National Forest have been given initial protection. The work was conducted as a regular federal project during the period 1924-1931, inclusive; while since 1933, only E.C.W. personnel has been used. A program has been developed for continuing the E.C.W. work during 1937.

On the Allegheny National Forest in Pennsylvania, the Hearts Content tract was initially cleared of Ribes in 1929. The entire control area of 461 acres was reexamined for Ribes in 1931, and the most likely Ribes sites, totalling 166 acres, were reworked again in 1933. During 1932, an area of 135 acres known as the Hazelwood Oil Company tract was given initial protection, while in 1933 two additional pine areas at Kelly Pines and Sandstone Springs camp sites were initially cleared of Ribes. Since 1933, all control work on this forest has been performed by E.C.W. crews. Most of the initial control projects have been completed, and protection maintained by periodic reworkings. Only a small amount of control work is planned for 1937 but during 1938 many areas will be reworked.

Table 13- Summary of Ribes Eradication Work on Federal Lands in Connection With Regular Cooperative Program 1924-1936, Inclusive

(Data included in preceding summaries of control work under Regular Cooperative Program)

Project	Type of Work	Acreage Examined	Ribes Pulled		Cost					Per Acre	
			Wild	Cult.	B.P.I.	State	Forest Service	Park Service	Total	Cost	Ribes
Acadia National Park, Me.	All Initial	7,726	503,920	-	\$3145.83	-	-	\$8345.53	\$11,491.36	1.49	65.2
White Mt. National Forest, N.H.	All Initial	6,779	182,493	-	75.63	224.11	1471.62	-	1,771.36	.261	26.9
Allegheny National Forest, Pa.	Initial	891	129,019	8	136.56	-	507.71	-	644.27	.723	144.8
	Reerad.	627	19,993	-	71.29	-	272.06	-	343.35	.548	31.9
	Total	1,518	149,012	8	207.85	-	779.77	-	987.62	.651	98.2
Totals	Initial	15,396	815,432	8	3358.02	224.11	1979.33	8345.53	13,906.99	.903	53.0
	Reerad.	627	19,993	-	71.29	-	272.06	-	343.35	.548	31.9
	Total	16,023	835,425	8	\$3429.31	\$224.11	\$2251.39	\$8345.53	\$14,250.34	.889	57.1

The control work performed on federal lands under the E.C.W. program is summarized in Table 27, and a summary of all work on such areas under the regular and E.C.W. programs is given in Table 139.

Ribes Eradication - Regular Cooperative Program

White pines must be grown under absolutely sanitary conditions, as regards Ribes, to prevent infection from blister rust. Therefore, it is essential that the white pine stock in each nursery be protected by eradicating all Ribes within 1500 feet and all European black currants from within one mile. All of the Northeastern States, except Rhode Island, have state nurseries growing white pines. Control of the disease has been established and is being maintained in all of these nurseries. Most of the commercial growing nurseries are located in Massachusetts, Connecticut, New York, New Jersey, and Pennsylvania. In the other Northeastern States there are only a few such nurseries growing white pines. Sanitation zones have been established around most of the important commercial nurseries in New England. Control work around the private nurseries in New York has been limited due to the relatively few white pines grown and the abundance of cultivated bushes within the prescribed sanitation zones which would necessitate a large expenditure by the nurserymen for compensation if these bushes were removed. According to the present state blister rust law in New York, effective February 17, 1930, no compensation shall be paid by the state for any species of Ribes destroyed in connection with the establishment of Ribes-free zones around commercial nurseries, but fair compensation must be paid for such bushes by the person owning or operating the protected nursery. None of the commercial nurseries growing white pine in New Jersey have established sanitation zones. In Pennsylvania, seven commercial nurseries have taken such action. However, in both states an effort is being made to extend protection to the most important of the commercial nurseries.

Since 1929, a separate record has been kept of the Ribes eradication work performed in connection with the protection of white pines in the nurseries. Prior to 1930, such control work was incorporated only in the regular Ribes eradication summaries. The results of nursery sanitation work conducted under the regular program during 1935 and 1936, and since 1930 are shown in Table 14 and Table 15 and 16, respectively. A marked decrease in the number of Ribes per acre is apparent in the re-eradication projects (Table 15.) In fact, an average of only 1.5 bushes per acre was found.

The status of nursery sanitation work in the various Northeastern States, as of December, 1936, is indicated in Table 96.

Table 14 - Summary of Regular Cooperative Nursery Sanitation Work in Northeastern States

1935

Type of Erad.	No. Nurseries Worked	Acreage Examined	Ribes Pulled		Total Man Days	Cost			Per Acre		
			Wild	Cult.		Indiv.	State	Total	Cost	Ribes	Man Days
Re-Erad.	1	700	1,542	-	66	-	212.47	212.47	.304	2.2	0.09
Re-Erad.	6	2,543	182	58	66	-	304.56	304.56	.120	0.07	0.02
Re-Erad.	4	7,390	678	87	97	-	353.60	353.60	.048	0.09	0.01
Initial	1	148	1,608	320	27	46.90	-	46.90	.317	10.9	0.18
Re-Erad.	4	741	3,146	-	148	34.75	308.15	342.90	.463	4.2	0.20
Total	5	889	4,754	320	175	81.65	308.15	389.80	.438	5.3	0.20
Initial	1	148	1,608	320	27	46.90	-	46.90	.317	10.9	0.18
Re-Erad.	15	11,374	5,548	145	367	34.75	1178.78	1213.53	.107	0.5	0.03
Total	16	11,522	7,156	465	394	81.65	1178.78	1260.43	.109	0.6	0.03

1936

Re-Erad.	11	2,198	311	27	77	-	427.11	427.11	.194	0.1	.04
Re-Erad.	1	630	2,725	-	22	-	90.64	90.64	.144	4.3	.03
Re-Erad.	4	860	3,158	3	247	-	770.87	770.87	.896	3.7	.29
Re-Erad.	16	3,688	6,194	30	346	-	1288.62	1288.62	.349	1.7	.0

Costs of costs: Includes cost of laborers, scouts and foremen while engaged in locating and eradicating Ribes in nursery sanitation zones (labor furnished by owners usually charged at rate of 40¢ per hour) - cost of crew transportation.

Table 15 - Summary of Nursery Sanitation Work Under Regular Cooperative Program
in Northeastern States, 1930-1936, Inclusive.

By Years

Year	Type of Erad.	Acreage Examined	Ribes Pulled		Total Man Days	Cost				Per Acre		
			Wild	Cult.		Indiv.	Towns	State	Govt.	Total	Cost	Ribes
1930	Initial	4,973	110,704	182	447	528.77	-	905.19	-	1,433.96	.288	22.3
	Re-Erad.	20,752	59,542	643	1,490	568.89	-	4,198.33	-	4,767.22	.230	2.9
	Total	25,725	170,246	825	1,937	1,097.66	-	5,103.52	-	6,201.18	.241	6.6
1931	Initial	3,048	6,117	55	120	5.60	-	240.36	139.92	385.88	.127	2.0
	Re-Erad.	26,776	26,126	1,086	1,671	117.69	-	4,863.42	372.50	5,353.61	.200	1.0
	Total	29,824	32,243	1,141	1,791	123.29	-	5,103.78	512.42	5,739.49	.192	1.1
1932	Initial	4,759	16,478	1,222	565	50.65	-	1,588.32	172.87	1,811.84	.381	3.5
	Re-Erad.	12,903	12,543	60	1,247	155.51	7.73	3,828.15	5.33	3,996.72	.310	1.0
	Total	17,662	29,021	1,282	1,812	206.16	7.73	5,416.47	178.20	5,808.56	.329	1.6
1933	Initial	1,490	19,102	32	67	59.40	-	196.95	36.80	293.15	.197	12.8
	Re-Erad.	18,535	33,280	368	1,297	183.50	148.45	4,608.74	255.54	5,193.23	.283	1.8
	Total	19,825	52,382	400	1,364	242.90	148.45	4,805.69	292.34	5,489.38	.277	2.6
1934	Initial	1,682	24,958	94	45	186.80	-	-	-	186.80	.111	14.8
	Re-Erad.	7,181	7,465	-	247	-	-	907.00	-	907.00	.126	1.0
	Total	8,863	32,423	94	292	186.80	-	907.00	-	1,093.80	.123	3.7
1935	Initial	148	1,608	320	27	46.90	-	-	-	46.90	.317	10.9
	Re-Erad.	11,374	5,548	145	367	34.75	-	1,178.78	-	1,213.53	.107	0.8
	Total	11,522	7,156	465	394	81.65	-	1,178.78	-	1,260.43	.109	0.6
1936	Initial	-	-	-	-	-	-	-	-	-	-	-
	Re-Erad.	3,688	6,194	30	346	-	-	1,288.62	-	1,288.62	.349	1.7
	Total	3,688	6,194	30	346	-	-	1,288.62	-	1,288.62	.349	1.7
Totals	Initial	16,100	178,967	1,905	1,271	878.12	-	2,930.82	349.59	4,158.53	.258	11.1
	Re-Erad.	101,009	150,698	2,332	6,665	1,060.34	156.18	20,873.04	633.37	22,722.93	.225	1.0
	Total	117,109	329,665	4,237	7,936	1,938.46	156.18	23,803.86	982.96	26,881.46	.230	2.8

Basis of Costs: Same as indicated for Table 14.

Table 16

By States

State	Type of Brad.	Average Exposed	Ribes Pulled		Total Man Days	Cost			Per Acre			
			Wild	Cult		Indiv	Towns	State	Govt.	Total	Cost	Ribes
Conn.	Initial	206	103,516	22	165	324.45	-	198.20	-	522.65	2.54	502.5
	Re-brad.	272	8,873	-	74	-	156.18	82.27	-	238.45	.877	32.3
	Total	478	112,389	22	237	324.45	156.18	280.47	-	761.10	1.59	235.1
N. H.	Initial	-	-	-	-	-	-	-	-	-	-	-
	Re-brad.	1,327	7,647	-	144	172.28	-	308.71	-	480.99	.362	5.8
	Total	1,327	7,647	-	144	172.28	-	308.71	-	480.99	.362	5.8
Vt.	Initial	-	-	-	-	-	-	-	-	-	-	-
	Re-brad.	1,150	3,082	-	160	-	-	516.01	-	516.01	.449	2.7
	Total	1,150	3,082	-	160	-	-	516.01	-	516.01	.449	2.7
Mass.	Initial	682	7,567	112	85	110.05	-	212.79	10.00	332.84	.488	11.1
	Re-brad.	5,469	2,831	179	566	89.20	-	2,183.86	-	2,273.06	.655	0.3
	Total	4,151	10,398	291	651	199.25	-	2,396.65	10.00	2,605.90	.628	2.5
R. I.	Initial	1,190	133	520	158	-	-	343.56	162.87	506.43	.426	0.1
	Re-brad.	4,563	4,622	165	110	-	-	749.62	-	749.62	.164	1.0
	Total	5,753	4,755	685	268	-	-	1,093.18	162.87	1,256.05	.218	0.3
Conn.	Initial	6,537	5,352	102	215	204.32	-	345.69	139.92	689.93	.105	0.8
	Re-brad.	34,551	5,855	864	1,137	557.04	-	2,910.44	610.87	4,078.35	.118	0.2
	Total	41,133	11,207	966	1,352	761.36	-	3,256.13	750.79	4,768.28	.116	0.3
N. Y.	Initial	3,110	26,017	634	382	5.60	-	1,219.95	-	1,225.55	.394	3.4
	Re-brad.	50,982	89,498	1,121	3,594	207.07	-	11,565.00	-	11,772.07	.231	1.8
	Total	54,092	115,515	1,755	3,976	212.67	-	12,784.95	-	12,997.62	.240	2.1
N. J.	Initial	600	462	49	7	-	-	22.20	-	22.20	.032	0.8
	Re-brad.	610	509	-	8	-	-	31.47	22.50	53.97	.088	0.9
	Total	1,210	1,031	49	15	-	-	53.67	22.50	76.17	.063	0.9
Penn.	Initial	3,725	35,920	466	261	233.70	-	588.45	36.80	858.93	.231	9.6
	Re-brad.	4,085	27,721	3	872	34.75	-	2,525.65	-	2,560.41	.627	0.3
	Total	7,810	63,641	469	1,133	268.45	-	3,114.09	36.80	3,419.34	.438	3.1
Totals	Initial	16,100	178,967	1,905	1,271	878.12	-	2,950.82	349.59	4,358.53	.258	1.1
	Re-brad.	101,009	150,698	2,332	6,665	1,060.34	156.18	20,873.04	653.37	22,722.93	.255	1.5
	Totals	117,109	329,665	4,237	7,936	1,938.46	156.18	23,805.86	982.96	26,831.46	.230	0.8

Ribes Nigrum Elimination - Regular Cooperative Program

The cooperating states are eliminating *Ribes nigrum* as rapidly as practicable under existing conditions. Such activities have been conducted as a special project in four states, Rhode Island, Connecticut, Massachusetts and New York. In the first two states the work has been completed. It is also finished on the mainland of Massachusetts, except in the city of Worcester where the bushes have been located. In New York, the *Ribes nigrum* have been destroyed in 225 or 22 percent of the 1012 townships. All of the above mentioned states except Massachusetts have state laws which prohibit the possession of such bushes. In the other 5 Northeastern States the cultivated black currants are destroyed in connection with the work of eradicating wild *Ribes* and other cultivated bushes. It may, however, be necessary in these states to make special arrangements for eliminating *Ribes nigrum* outside the control areas.

Table 17 indicates the results accomplished in special black currant work under the regular program during 1935 and 1936, and during the period 1918 to 1936, inclusive.

Special Black Currant Elimination Work Under The Regular Cooperative Program in Northeastern States.

1935 and 1936

State	Year	No. Towns		No. Patches Ribes Located	Ribes Pulled			Total Man Days	Cost		
		Worked	Completed		Nigrum	Other Cult.	Total		Local Coop.	State	Total
Mass.	1935	8	5	95	1,084	-	1,084	70	211.90	371.44	583.34
N. Y.	1935	25	25	194	1,520	-	1,520	138	-	797.94	797.94
	1936	2	2	43	229	-	229	14	-	59.88	59.88
Totals	1935	33	30	289	2,604	-	2,604	208	211.90	1169.38	1381.28
	1936	2	2	43	229	-	229	14	-	59.88	59.88

1918 - 1936, Inclusive

State	No. Properties Inspected	No. Patches Ribes Located	No. Ribes Pulled			Total Man Days	Cost			
			Nigrum	Other Cult.	Total		Indiv.	State	B.P.I.	P.W.A.
Mass.	393,101	4,290	31,227	-	31,227	5483 1/2	2251.90	20,357.60	100.00	-
R.I.	110,137	1,917	16,219	1,093	17,312	1,929	-	9,178.56	675.53	473.80
Conn.	56,960	2,713	354	18,696	19,050	1,533	-	2,509.33	3647.42	912.26
N.Y.	522,400	5,102	36,930	761	37,691	5,135 1/2	-	27,277.37	-	-
Totals	1,082,598	14,022	84,730	20,550	105,280	14,081	2251.90	59,322.85	4422.95	1,386.06

Basis of costs: Includes cost of laborers, scouts, and foremen while engaged in locating and destroying *Ribes nigrum* and other bushes as indicated.

Blister Rust Canker Elimination Work - Regular Cooperative Program

Blister rust canker elimination work in the Northeastern States has been limited to a few projects on public lands, mainly at Acadia National Park. The only reported instance of such work on private lands occurred in Maine during the winter of 1932-1933 when a few individual owners expended \$1,055.12 on this project. Most of the canker elimination work has been performed in connection with the Emergency programs. However, as indicated in Table 18, a small amount of such work was conducted during 1932 and 1933 in Maine and New York under the Regular cooperative program. A complete summary of all canker elimination projects under all programs is given in Table 99.

Table 18 - Blister Rust Canker Elimination Work Conducted Under Regular Cooperative Program in Northeastern States

State		Period	Est. No. Pines Examined	No. Fatally Infected Pines Cut Down	No. Pines Treated For Infection	No. Cankers Removed		Total Man Days	Cost		
						Branch	Stem		Indiv.	Park Service	Total
Maine	Acadia Park	1932	2,546	319	715	1,480	61	100	-	321.04	321.04
	Private Land	1932									
		1933	77,000	6,046	10,704	14,677	1376	329	1055.12	-	1055.12
	Total	-	79,546	6,365	11,419	16,157	1437	429	1055.12	321.04	1376.16

In addition, during 1933 the ornamental pines on the state reservation at Saratoga, New York were examined for infection by state employees. The area contained 75 acres of plantations about 20 years old. There was also considerable natural white pine scattered over some 700 acres of woodlands. The pines had been previously pruned to a height of 6 feet which aided materially in inspecting them for infection. The work disclosed a total of 113 diseased trees, 49 of which had died from blister rust. These dead trees were cut, and limb infections were also removed from 64 other pines. No time or cost figures are available for this work.

Pine and Control Area Mapping

Pine and control area mapping is an essential part of blister rust control, especially in sections where the pine areas are scattered and where the Ribes eradication work is performed by crews composed of inexperienced men obtained from relief sources. Such maps assist the crew foremen in locating the boundaries of control areas, and consequently limit their activities to crew supervision.

During the period of experimental control work from 1918-to 1922, the white pine areas in Rhode Island, Connecticut and Vermont were roughly mapped, also a few sample townships were type mapped in Maine, New Hampshire and Massachusetts in order to develop methods and determine costs. The amount of mapping work was necessarily limited, as the field personnel was employed only during the Ribes eradication season. Funds were sufficient to employ only the state leaders on a yearly basis. Since 1922, a force of district leaders have also been employed full time. During the Ribes eradication season these men are engaged chiefly in supervising crew and scout activities and prior to the advent of the Emergency programs in 1933, their time during the fall, winter and early spring months was devoted mainly to informational and service activities to secure local cooperation in control activities during the following Ribes eradication season.

Consequently, these leaders were unable to do much mapping. Also, in large portions of Maine, New Hampshire, Massachusetts and New York, the pine areas were so continuous that detailed pine mapping was not essential. Under such conditions, where town and state money was available, the eradication work was conducted on the basis of road block units irrespective of property lines. In New York, woodland maps were prepared for 36 counties. This work was conducted chiefly by state men and the maps showed roughly by symbols the location of the white pine areas.

During recent years the unprotected pine areas have been smaller and more scattered. Consequently, there has been a greater need for detailed pine and control area maps. The Emergency programs since 1933 have been of great assistance in providing men to do the necessary mapping; and as a result, thousands of acres have been mapped in each of the Northeastern States. The status of the mapping work is shown by a regional map on page 156. The amount of pine and control area mapping performed under the regular cooperative program since 1933 is indicated in Table 19, while the total accomplishment on this project under all programs is given in Table 101.

Table 19 - Pine and Control Area Mapping Under The Regular Cooperative Program in Northeastern States During Period 1933-1936, Inclusive.

State	Period	Acreage Mapped	Acreage Examined But Not Mapped	Man Days	Total Cost (All State)
Maine	1933-35	21,976	36,055	104	625.98
N. H.	1933-35	18,538	-	311	1,244.00
Conn.	1933-35	120	1,800	7	35.00
N. Y.	1933-35	133,858	67,320	720	3,456.00
	1936	46,880	8,750	270	1,296.00
	Total	180,738	76,070	990	4,752.00
Totals	1933-35	174,292	104,975	1,142	5,360.98
	1936	46,880	8,750	270	1,296.00
	Total	221,172	113,725	1,412	6,656.98

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BLISTER RUST CONTROL ACTIVITIES UNDER THE
E.C.W. CONTROL PROGRAM IN THE NORTHEASTERN STATES

The E. C. W. Program in the Northeastern States during the period 1933 to 1936, inclusive has provided an excellent opportunity for extending the application of blister rust control measures to unprotected white pine areas of commercial and scenic importance. Prior control work on many of these areas had been prevented either by lack of cooperation or because the cost of eradicating the existing Ribes was excessive under ordinary conditions. The control project was especially adapted to the E.C.W. Program, since the Ribes eradication work required chiefly manual labor and only a small expenditure for equipment. The E.C.W. program was the first of the various Emergency programs to furnish labor for employment on our project. The states welcomed this work at the beginning of the program not only for the contemplated protective results, but because it offered a means of giving immediate and effective employment, under regular trained supervision, to hundreds of C.C.C. men during the organization period when other projects for various reasons could not be put into action. During these first few weeks, blister rust control gave many of the enlisted men their first opportunity to become acquainted with the woods, to learn discipline, and to obtain an appreciation of a day's work. At the winter meeting of New England Section of the Society of American Foresters in 1934 Mr. Tillotson, in charge of the E.C.W. program in the Northeastern States, publicly remarked that he wished to commend the blister rust control organization for the way it handled its project in connection with the E.C.W. program. He mentioned that this control organization, being in effective operation at the start of the E.C.W. work, accomplished excellent results without delay or confusion.

The E.C.W. program has provided not only an opportunity for the employment of a large force of workers on Ribes eradication, but also permitted many men to be used on such control projects as pine and control area mapping, nursery sanitation, and blister rust canker elimination.

Allotment of Labor

No direct allotment of E.C.W. funds has been made for blister rust control projects in the Northeastern States. Prior to the start of control activities each year, the respective state blister rust control leaders and the E.C.W. officials have developed plans providing a definite number of man days of C.C.C. labor from certain camps for control activities. The regional leader has cooperated with the National Park and U. S. Forest officials in preparing similar plans for the E.C.W. projects at Acadia National Park in Maine, the White Mountain National Forest in New Hampshire and the Allegheny National Forest in Pennsylvania.

Responsibilities and Direction of Work

The field activities of the C.C.C. crews assigned to blister rust control work have been directed by E.C.W. technical foremen and checkers. In a few instances, experienced state paid foremen have been assigned to assist in directing the E.C.W. crews. The combined force was given technical supervision by the regular permanent state and district blister rust control leaders, except on federal lands where such technical supervision was supplied by the regional blister rust control office personnel. These leaders selected the areas to be protected, assisted in training the field men in proper methods of control, and checked the work to make sure desired results were accomplished.

During June to September 1933, three of the district blister rust control

leaders in Maine and two in New York functioned as superintendents of C.C.C. camps devoted entirely to Ribes eradication work. None of the district leaders acted as camp superintendents after 1933. Due to various other emergency projects, since September, 1933, the blister rust control leaders have devoted less than a third of their time to E.C.W. activities. In most instances, the technical foremen and checkers provided for the E.C.W. program in 1933 consisted of well qualified and experienced men recommended by the blister rust control supervisory force. Few personnel changes were made in the E.C.W. supervisory force prior to 1935. However, during the past two years, many changes occurred; and when new camps were established, politics frequently entered into the selection of such men. In spite of this condition, the results were generally satisfactory, due in a large part to the effective efforts of the district leaders.

Selection of Areas to Be Protected

The areas selected for control work by the C.C.C. personnel were in most cases within a radius of 20 miles of the respective camps, preference being given to areas requiring initial protection. Control work in Massachusetts was limited to publicly-owned lands. It was also restricted to such lands in New York during 1933, and in Pennsylvania from 1933-1935, inclusive. With these exceptions, Ribes eradication work under the E.C.W. Program in the Northeastern Region has been performed on both public and private lands, about 90% of the total area covered being in private ownership.

Distribution of Work and Personnel Employed

Ribes eradication work was conducted during 1933 from a total of 114 C.C.C. camps in the Northeastern States (Table 22.) Five of these camps were located in the White Mountain National Forest, one in the Green Mountain National Forest, two at Acadia National Park, and the other 106 were state camps scattered over the forest region of New England, New York, and Pennsylvania. Control work from some of the Pennsylvania camps was started on May 22, 1933, but in the other states most of the camps were not in a position to do field work until the latter part of June. The number of enlisted men employed on control work necessarily varied from day to day, the maximum number of men at any one time during 1933 being 3,294. Three of the Maine camps and two in New York were devoted entirely to Ribes eradication work from June to September, 1933. The number of enlisted men assigned to blister rust control work at each of the other 109 camps ranged from an average of 6 to 100. The field activities of these men were directed by 204 E.C.W. technical foremen and checkers and 36 state foremen.

During 1934, Ribes eradication work was conducted from a total of 125 C.C.C. camps in all of the Northeastern States (Table 22.) Four of these camps were located on the White Mountain National Forest, two at Acadia National Park, and two at the Allegheny National Forest. The maximum number of enlisted men assigned to blister rust work from these 125 camps at any one time was 2,483. Four of the New York camps were devoted chiefly to Ribes eradication work from May to September, and two other New York camps had 67 and 76 men, respectively, assigned to control work during this period. In Maine, an average of 86 men worked out of one camp and 57 out of another. The number of enlisted men assigned to blister rust control from each of the other 114 camps ranged from an average of 5 to 43 men per day. The field activities of these laborers were supervised by 287 E.C.W. technical foremen and checkers.

Table 22 - Distribution of Work and Personnel Employed on E.C.W. Ribes Eradication Projects in Northeastern States, 1933-1936, Inclusive

State	No. C. C. C. Camps Where Control Work Performed				No. Towns Where Control Work Performed				Number of Enlisted Men Employed				Number Technical Foremen & Checkers									
	1934		1935		1935		1936		1934		1935		1936		1933		1934		1935		1936	
	1933	1934	1935	1936	1933	1934	1935	1936	Ave. #	Ave. #	Ave. #	Ave. #	Ave. #	Ave. #	Ave. #	Ave. #	Ave. #	Ave. #	Ave. #	Ave. #	Ave. #	
State	4	4	4	4	7	11	10	13	310	186	239	157	452	311	384	335	38	31	40	27		
Acadia Park	2	2	2	2	6	5	2	2	79	49	53	33	57	21	36	35	9	4	4			
Total	6	6	6	6	13	16	12	15	389	235	292	190	509	332	420	370	47	35	44	27		
State	5	5	6	8	23	16	27	18	342	212	130	107	154	122	151	140	34	17	13			
W. Mt. N.F.	4	3	2	-	10	3	4	-	55	35	44	15	47	11	-	-	8	3	3			
Total	9	8	8	8	33	19	31	18	397	247	174	122	201	133	151	140	42	20	16	1		
Vermont	7	6	3	5	17	14	4	6	187	68	147	110	97	78	84	64	15	9	4			
Mass.	12	9	10	10	17	15	25	14	99	45	112	58	141	103	134	63	8	9	11			
R.I.	3	2	6	4	3	2	8	6	28	28	62	62	237	190	92	92	4	5	12			
Conn.	7	8	10	7	19	15	40	10	144	87	161	136	182	182	115	90	12	13	15			
N.Y.	8	29	23	38	19	75	64	125	441	311	1023	671	823	702	1280	1042	67	121	71			
N.J.	-	1	-	-	-	1	-	-	-	-	5	3	-	-	-	-	-	-	-			
Pa.	62	54	69	59	62	59	109	140	347	347	784	512	1142	704	878	613	45	73	89			
Allegheny N.P.	-	2	3	3	-	2	4	3	-	-	26	6	41	10	47	12	-	2	3			
Total	62	56	72	62	62	61	113	143	347	347	810	518	1183	714	925	625	45	75	92			
State	108	118	131	135	167	208	287	332	1898	1284	2663	1816	3228	2392	3118	2439	225	278	255			
Nat. Park	2	2	2	2	6	5	2	2	79	49	53	33	57	21	36	55	9	4	4			
Nat. Forests	4	5	5	3	10	5	8	3	55	35	70	21	88	21	47	12	8	5	3			
Total	114	125	138	140	183	218	297	337	2032	1368	2786	1870	3375	2434	3201	2486	240	287	265			

*Based on the average number of men that would have been employed if the work had been performed on a five-day week basis for four months rather than the period actually worked.

*Based on average number of men employed during actual period of work.

The number of E.C.C. men available for blister rust control work during 1935 and 1936 was increased somewhat over the number employed during the first two years of the program. In New York a few camps continued to confine their work chiefly to Ribes eradication during the period May to September of each year. All states, except New Jersey, conducted work under this program during the past two years. Table 22 shows the distribution of the work and the personnel employed. The number of enlisted men assigned to the project from each of the camps ranged from an average of 6 to 130 during 1935 and from an average of 2 to 122 in 1936.

Basis for Personnel Costs and Hours of Work

It is impossible to give accurate cost figures for the enlisted personnel under the E.C.W. Program. In compiling such cost data for this report, the wages of the enlisted men were figured at the rate of \$1.00 per day plus an arbitrary charge for subsistence expenses. Such expenses were computed at the rate of 35¢ per man per day in 1933, 40¢ in 1934 and 50¢ during 1935 and 1936. Accurate figures were available for the wages and expenses of the E.C.W. technical foremen and checkers and any state foremen assigned to the E.C.W. work. The former were paid monthly salaries ranging from \$100.00 to \$167.50 per month, the majority of them receiving from \$130 to \$140.00.

During the first few weeks, lack of transportation and the practice of requiring crews in some camps to report back to camp for the noon meal materially reduced the actual working time of the men and caused a physical reaction to the personnel that was not favorable to productive results. These difficulties were overcome when the camps were supplied with adequate transportation facilities and a regulation was issued in 1934 requiring each enlisted man to perform 30 hours of actual field work per week. In compiling the cost of the E.C.W. enlisted men's time for the summaries in this report, their total time (8 hours per man per day) was charged. This includes time spent in traveling to and from work and the lunch hours.

Transportation

During the first few weeks of the E.C.W. Program, it was necessary for many of the crews to walk more than four miles per day in getting to and from work. Trucks were, however, supplied to all the camps as soon as possible and increased efficiency resulted. Trained drivers were assigned to each E.C.W. truck and safety regulations adopted. In this report, where actual transportation costs were not available for the E.C.W. work, such costs were estimated either on the basis of \$40. per month for each truck plus 5¢ per mile for operating costs or at the rate of 12¢ per mile for each mile the truck was used on the project.

Accomplishments in Various Blister Rust Control Projects Under E.C.W.
Program in Northeastern States, 1933-1936, Inclusive.

Ribes Eradication

Control activities have been performed under the E.C.W. Program in all of the Northeastern States, except New Jersey, each year since 1933. In New Jersey, a few E.C.W. laborers were used from one camp during the 1934 season. During the period 1933 to 1936, inclusive, a total of 1,683,435 acres were cleared of 49,795,451 wild Ribes and 69,082 cultivated bushes by E.C.W. crews in the Northeastern States. This control work required 735,077 man days of labor by the E.C.W. enlisted personnel and the few crew foremen furnished by the states, or an average of .44% of a man day per acre. The acreage cleared of Ribes under E.C.W. Program represents 39.4 percent of all control work performed in this region during the past four years.

As previously mentioned, it is impossible to give accurate cost figures for the work under the E.C.W. Program, except for the E.C.W. technical foremen and checkers and any crew foremen furnished by the states. The estimated cost of the E.C.W. Ribes eradication work, exclusive of supervision, during the period 1933 to 1936, inclusive, amounted to \$1,181,761.42, or 70.2 cents per acre, figuring wages and subsistence expenses for the enlisted men on the basis mentioned under heading "Basis of personnel costs", supplies and wages of state foremen according to amounts actually paid, and transportation as indicated under heading "Transportation". Adding in the cost of the E.C.W. technical foremen and checkers increases the total cost to \$1,585,182.83 or 94.2 cents per acre. These per acre costs figures are considerably higher than the average cost of eradicating Ribes in connection with the Regular work during previous years. It may be attributed in part to the following causes. The district blister rust control leaders' activities in connection with the E.C.W. program were limited to technical supervision. In other words, they instructed the CCC personnel as to where and how to do the necessary control work and performed sufficient administrative checking to make sure the desired results were accomplished. However, lack of full authority over the field men was a severe handicap in many instances. The amount and quality of the supervision provided by the E.C.W. technical foremen was also inadequate in some cases. The sites selected for the C.C.C. work usually represented difficulty factors above the average. The number of Ribes eradicated per acre by the C.C.C. men averaged about three times as many as during previous years under the Regular control program. Practically all of the total acreage was worked by crews in strip formation. The enlisted personnel consisted chiefly of men from the cities with little or no experience in manual labor and woods work. Consequently, close supervision was necessary. The wages paid to the E.C.W. technical foremen and checkers were also higher than those paid for similar work under the Regular program. The necessity of emphasizing the fundamentals of Ribes eradication to a changing and inexperienced personnel frequently prevented refinements in crew methods to eliminate lost motion and to increase crew flexibility under varying field conditions. Lack of transportation during the early part of the program often caused the men to walk more than two miles each way to and from work. The practice of requiring crews from some camps to report back to headquarters for the noon meal also consumed considerable time. However, since 1934, the regulation requiring a minimum of 30 hours actual field work per week for each enlisted man has resulted in increased efficiency.

A comparison of the per acre values in the different states as indicated by Tables 23 to 25 and by the graphs on pages 41 and 42 shows considerable variation. The average number of man-days required per acre is, of course, dependent on many factors; such as the number, size and distribution of the Ribes; density of undergrowth; topography; and the experience, ability and efficiency of the personnel. The high average for man-days per acre in Pennsylvania can be attributed chiefly to the large number and size of the Ribes and lack of experienced technical foremen. In New Jersey, the high

number of man-days per acre was due to the crew working chiefly in swamps eradicating concentrations of Ribes. Inadequate supervision has handicapped the E.C.W. work in Massachusetts, the technical foremen in many instances having to divide their time on other projects. Also, the procedure followed in a few of the Massachusetts camps whereby an enlisted worker was given full direction of the men on blister rust control was not effective. In Vermont, considerable work has been done in swampy sites, and in the northern part of the state, many of the Ribes were of large size. The amount of supervision was also inadequate in some of the Vermont camps during the first two years of the E.C.W. Program. This difficulty has been overcome since a permanent state leader and two additional blister rust control leaders were appointed in that state. The low per acre man-day figures for Rhode Island and Connecticut are due primarily to the small number and size of the Ribes in these two states.

No fair comparison can be made between the initial and re-eradication figures given in Tables 23 and 24 because the same areas are not involved. It will be noted, for example, that in Connecticut, Rhode Island, Vermont, Massachusetts and New York the man-day averages for all years are slightly higher for the re-eradication work than for the initial projects in spite of the fact that fewer Ribes per acre were pulled on the re-eradication work in the latter three states. Based on totals for all states the average man-days per acre for the initial work for all years was .48 compared with .38 for the re-eradication projects, however the number of Ribes per acre were nearly two times greater in the former class of work than in the latter. Consequently, it appears that the number of Ribes per acre is not such an important factor influencing time and cost as some of the other contributing items mentioned in the two previous paragraphs.

It will be noted in Table 25 and in the graph on page 42 that the average man-days per acre for all the E.C.W. work in the Northeastern States had decreased slightly each year since 1933. With the exception of 1934, corresponding decreases occurred in the average number of Ribes per acre. Decreases also occurred in the average cost per acre during 1934 and 1935 even though the subsistence charge was increased.

Numerous inspections by the E.C.W. checkers and administrative officials show that on the whole the quality of the E.C.W. Ribes eradication work in Northeastern region has been maintained at a high standard. The supervisory personnel acquitted themselves commendably in all respects and the enlisted men in most cases gave the job the best that was in them during the time they spent in the field. The project has not only resulted in the protection of hundreds of thousands of acres of valuable pine; but of even greater importance, it has helped to rehabilitate thousands of young men who were on the verge of despair prior to their enlistment in the C.C.C. camps.

Tables 23 to 25 summarize the results of the E.C.W. Ribes eradication work by states, years, and classes of work during the period 1933-1936, inclusive.

Table 23 - Ribes Eradication Work Performed Under E.C.W. Program
In Northeastern States During Period 1933-1936, Inclusive
(Excludes nursery sanitation and cultivated Ribes nigrum elimination projects)

Initial Control Work

State	Year	Total Acreage Worked	Ribes Pulled		Total Man Days	Cost		Per Acre	
			Wild	Cult.		State	E.C.W.	Total	Cost Ribes
Maine	1933	57,881	1,371,544	3,997	19,146	-	28,557.27	28,557.27	.493 23.7
	1934	37,219	1,961,582	829	14,986	-	24,047.56	24,047.56	.643 63.7
	1935	50,089	1,893,100	1,096	24,969	-	39,687.07	39,687.07	.792 37.8
	1936	43,382	1,907,502	1,410	15,839	-	25,852.13	25,852.13	.596 44.0
	Total	188,571	7,133,728	7,323	74,940	-	118,144.03	118,144.03	.627 37.6
N. H.	1933	34,079	2,447,871	373	19,386	-	30,381.60	30,381.60	.892 71.5
	1934	18,347	1,225,602	-	9,098	-	14,291.17	14,291.17	.779 66.0
	1935	16,082	1,451,947	-	8,991	-	13,881.56	13,881.56	.863 90.3
	1936	10,015	535,998	-	7,180	81.80	11,586.89	11,668.69	1.17 55.3
	Total	78,523	5,661,418	373	44,555	81.80	70,141.22	70,223.02	.894 72.1
t.	1933	6,204	112,181	30	2,944	-	4,493.14	4,493.14	.725 18.1
	1934	9,243	199,236	20	4,789	-	7,470.23	7,470.23	.808 21.7
	1935	11,920	225,480	153	5,151	-	8,125.50	8,125.50	.682 18.0
	1936	7,744	1,694,197	64	5,062	-	8,475.13	8,475.13	1.09 213.1
	Total	35,111	2,231,094	267	17,946	-	28,569.00	28,569.00	.814 63.6
Mass.	1933	4,502	82,685	-	1,207	-	1,732.68	1,732.68	.385 16.4
	1934	5,547	194,109	1,535	2,787	-	4,155.32	4,155.32	.749 55.1
	1935	15,553	458,507	1,109	7,837	-	11,716.37	11,716.37	.753 29.5
	1936	8,835	197,668	39	3,406	-	5,380.38	5,380.38	.609 23.1
	Total	34,437	932,969	2,683	15,237	-	22,984.75	22,984.75	.667 27.1
.I.	1933	80	129	-	63	-	97.07	97.07	1.21 1.9
	1934	-	-	-	-	-	-	-	-
	1935	26,257	13,531	320	4,582	-	7,154.27	7,154.27	.272 7.0
	1936	-	-	-	-	-	-	-	-
	Total	26,337	13,660	320	4,645	-	7,251.34	7,251.34	.275 7.5
onn.	1933	-	-	-	-	-	-	-	-
	1934	27,885	55,661	719	1,848	-	3,085.42	3,085.42	.111 2.0
	1935	40,362	330,661	3,103	7,728	-	12,720.39	12,720.39	.315 6.7
	1936	22,839	42,117	703	1,398	-	3,325.71	3,325.71	.140 1.8
	Total	91,086	428,439	4,525	10,974	-	19,131.52	19,131.52	.210 4.5
Y.	1933	5,327	125,811	70	8,451	-	12,465.85	12,465.85	2.34 28.3
	1934	123,434	4,858,976	4,638	52,722	2,269.80	63,888.70	66,158.50	.688 32.5
	1935	132,681	3,878,803	10,561	52,722	11,709.21	76,670.31	88,379.52	.663 29.2
	1936	153,185	4,474,769	10,753	67,808	5,512.19	111,065.78	116,577.97	.761 25.8
	Total	414,627	13,338,359	26,022	181,703	19,491.20	284,090.64	303,581.84	.732 34.1
J.	1934	381	19,795	304	247	-	346.50	346.50	.909 38.0
	1933	17,255	1,444,461	204	14,461	-	20,577.07	20,577.07	1.19 63.7
	1934	18,377	2,739,437	160	20,455	-	30,837.57	30,837.57	1.68 46.1
	1935	40,487	3,166,081	5,843	42,929	-	65,021.99	65,021.99	1.61 78.2
	1936	47,825	1,882,928	7,548	45,687	-	76,325.78	76,325.78	1.60 59.4
	Total	123,944	9,232,907	13,755	123,532	-	192,762.41	192,762.41	1.53 74.7
Totals	1933	125,328	5,584,682	4,674	65,658	-	98,309.68	98,309.68	.784 34.6
	1934	240,433	11,254,398	8,205	106,932	2,269.80	168,122.47	170,392.27	.700 30.8
	1935	333,431	11,418,110	22,185	154,909	11,709.21	234,977.46	246,686.67	.740 31.5
	1936	293,825	10,735,179	20,503	146,380	5,593.99	242,011.80	247,605.79	.843 39.0
	Total	993,017	38,992,369	55,572	473,879	19,573.00	743,421.41	762,994.41	.763 35.8

Basis of Costs: See Page 35.

Table 24

in Northeastern States During Period 1933-1936, Inclusive.
(Includes nursery sanitation and cultivated *Ribes nigrum* elimination projects)

Re-Eradication Work

Year	Total Acreage Worked	Ribes Pulled		Total Man Days	State	Cost		Per Acre		
		Wild	Cult.			E.C.W.	Total	Cost	Ribes	Man Days
1933	7,323	128,145	53	2,094	-	3,198.20	3,198.20	.437	17.5	.29
1934	10,612	152,042	-	2,028	135.00	3,238.00	3,373.00	.318	12.4	.19
1935	24,989	203,224	18	4,928	-	7,910.28	7,910.28	.317	8.1	.20
1936	77,658	1,097,334	1,962	17,453	-	28,477.40	28,477.40	.367	14.1	.22
Total	120,582	1,560,745	2,033	26,503	135.00	42,823.88	42,958.88	.356	12.9	.22
1933	8,003	290,298	-	2,844	-	4,490.44	4,490.44	.561	36.3	.36
1934	5,325	275,876	-	1,861	-	2,917.53	2,917.53	.548	51.8	.35
1935	6,010	252,068	-	3,002	-	4,639.12	4,639.12	.772	41.9	.50
1936	14,772	668,914	-	5,450	62.20	8,797.17	8,859.37	.600	45.3	.37
Total	34,110	1,487,156	-	13,157	62.20	20,844.26	20,906.46	.613	45.6	.39
1933	4,680	64,356	3	2,454	-	3,750.16	3,750.16	.801	13.8	.52
1934	7,765	175,595	-	5,145	-	8,025.77	8,025.77	1.03	22.6	.68
1935	4,797	112,708	85	1,848	-	2,907.90	2,907.90	.606	23.5	.39
1936	1,614	41,528	-	675	-	1,131.03	1,131.03	.701	25.7	.42
Total	18,856	394,187	88	10,122	-	15,814.86	15,814.86	.839	20.9	.54
1933	7,305	94,070	49	2,878	-	4,238.93	4,238.93	.580	12.9	.39
1934	2,554	94,433	56	2,439	-	3,637.03	3,637.03	1.42	37.0	.95
1935	1,643	40,335	113	1,440	-	2,158.38	2,158.38	1.31	24.5	.88
1936	5,802	65,671	396	2,261	-	3,571.42	3,571.42	.616	11.3	.39
Total	17,304	294,509	614	9,018	-	13,605.81	13,605.81	.786	17.0	.62
1933	4,943	3,212	86	2,472	-	3,805.81	3,805.81	.770	0.6	.50
1934	35,224	34,352	420	5,610	15.00	8,562.52	8,577.52	.244	1.0	.16
1935	57,596	76,233	1,954	12,511	-	19,533.37	19,533.37	.339	1.3	.22
1936	66,927	52,781	3,109	10,076	-	16,155.29	16,155.29	.245	0.8	.15
Total	164,690	166,578	5,569	30,669	15.00	48,056.99	48,071.99	.294	1.0	.19
1933	38,865	218,428	109	7,838	-	11,602.41	11,602.41	.299	6.6	.20
1934	29,240	512,344	74	10,357	-	17,212.76	17,212.76	.589	17.5	.35
1935	30,500	547,883	1,957	10,244	-	16,861.92	16,861.92	.553	18.0	.34
1936	26,361	321,428	567	6,714	-	14,249.14	14,249.14	.541	12.2	.25
Total	124,966	1,600,083	2,737	35,153	-	59,926.23	59,926.23	.480	12.8	.28
1933	28,209	1,012,838	113	19,539	-	28,820.65	28,820.65	1.02	35.9	.69
1934	17,856	332,093	334	7,642	330.20	12,164.78	12,494.98	.700	18.6	.43
1935	29,155	686,148	341	10,472	2350.62	15,229.28	17,559.90	.602	23.5	.36
1936	56,618	760,776	221	25,968	2111.87	42,535.90	44,647.77	.789	13.4	.46
Total	131,838	2,791,855	1,009	63,621	4772.69	98,750.61	103,523.30	.785	21.2	.48
1933	20,662	815,085	40	16,843	-	23,926.03	23,926.03	1.16	39.4	.82
1934	24,951	835,416	55	26,184	360.00	39,636.45	39,996.45	1.60	33.5	1.05
1935	21,203	609,708	1,185	21,307	-	32,274.78	32,274.78	1.52	28.7	1.00
1936	12,251	247,762	180	10,621	-	17,762.17	17,762.17	1.45	20.2	.87
Total	79,072	2,507,971	1,460	74,955	360.00	113,599.48	113,959.48	1.44	31.7	.95
1933	119,990	2,626,432	453	56,962	-	83,832.68	83,832.68	.699	21.9	.47
1934	133,527	2,392,151	939	61,268	840.20	95,394.59	96,235.09	.721	17.9	.46
1935	175,398	2,528,305	5,663	65,752	2330.62	101,515.03	103,845.65	.590	14.4	.37
1936	261,003	3,256,194	6,455	79,213	2174.07	132,679.52	134,853.59	.517	12.5	.30
Total	690,418	10,803,082	13,510	263,198	5344.89	413,422.12	418,767.01	.607	15.6	.38

Basis of Costs: See Page 35.

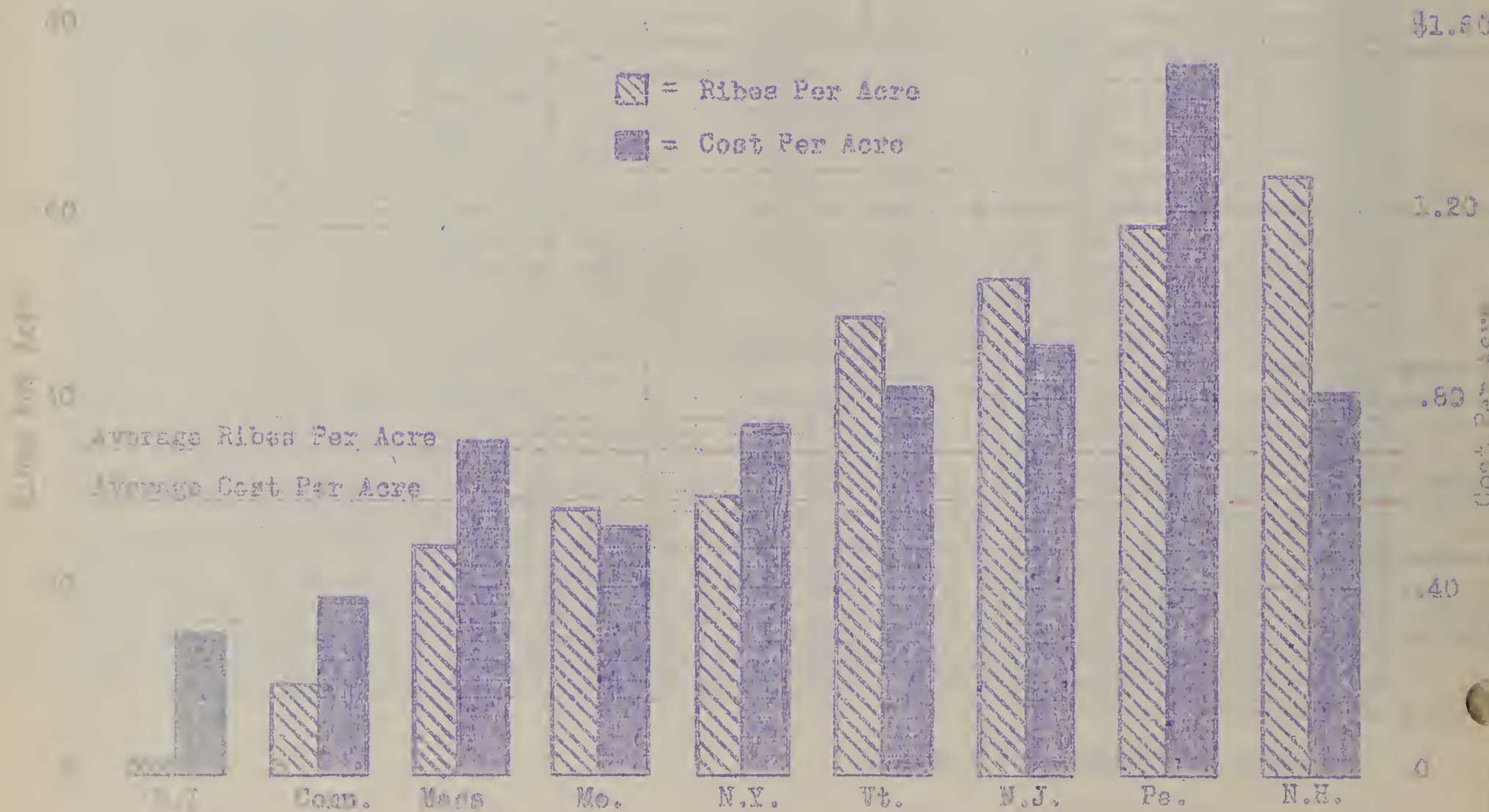
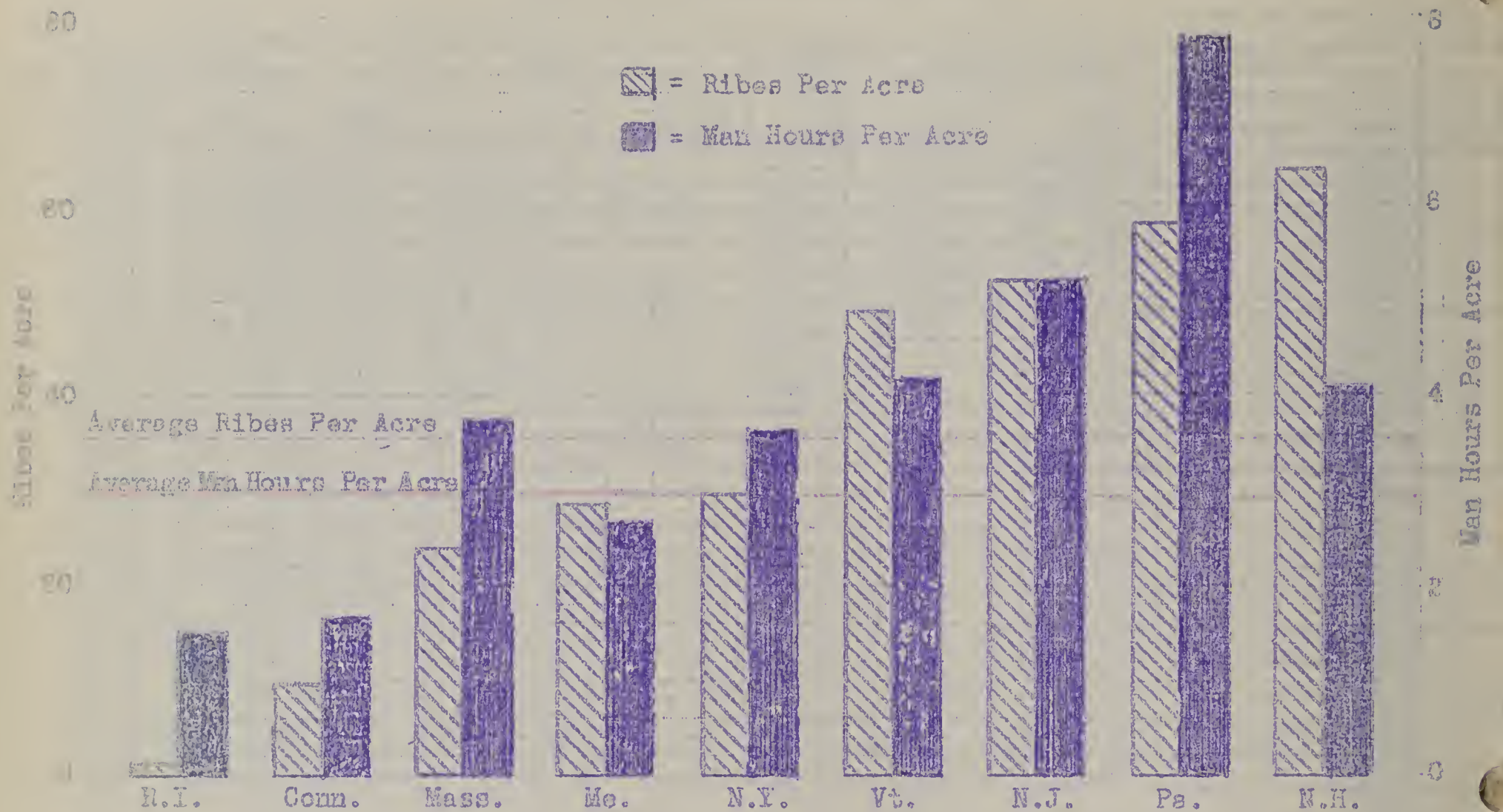
Table 25 - Ribes Eradication Work Performed Under E.C.W. Program
In Northeastern States During Period 1933-1936, Inclusive.
(Excludes nursery sanitation and cultivated Ribes nigrum elimination Project.)

Initial and Re-Eradication Work

State	Year	Total Acreage Worked	Ribes Pulled		Total Man Days	Cost			Per Acre	
			Wild	Cult.		State	E.C.W.	Total	Cost	Ribes
Maine	1933	65,204	1,499,689	4,050	21,240	-	31,755.47	31,755.47	.487	23.0
	1934	47,831	2,093,624	829	17,014	135.00	27,285.56	27,420.56	.573	42.5
	1935	75,078	2,096,324	1,114	29,897	-	47,597.35	47,597.35	.634	27.9
	1936	121,040	3,004,836	3,363	33,292	-	54,329.53	54,329.53	.449	24.3
	Total	309,153	8,694,473	9,356	101,443	135.00	160,967.91	161,102.91	.521	28.1
N.H.	1933	42,082	2,738,169	373	22,230	-	34,872.04	34,872.04	.829	65.1
	1934	23,672	1,501,478	-	10,959	-	17,208.70	17,208.70	.727	63.4
	1935	22,092	1,704,013	-	11,993	-	18,520.68	18,520.68	.838	77.1
	1936	24,787	1,204,912	-	12,630	144.00	20,384.06	20,528.06	.828	48.3
	Total	112,633	7,148,572	373	57,812	144.00	90,985.48	91,129.48	.809	65.5
Vt.	1933	10,884	176,537	33	5,398	-	8,248.30	8,248.30	.758	16.2
	1934	17,008	374,831	20	9,934	-	15,496.00	15,496.00	.911	22.0
	1935	16,717	338,188	238	6,999	-	11,033.40	11,033.40	.660	20.2
	1936	9,358	1,735,725	64	5,737	-	9,606.16	9,606.16	1.03	185.6
	Total	53,967	2,625,281	355	28,068	-	44,383.86	44,383.86	.822	48.3
Mass.	1933	11,807	176,755	49	4,085	-	5,971.61	5,971.61	.506	15.0
	1934	8,101	288,542	1,591	5,226	-	7,792.40	7,792.40	.962	35.4
	1935	17,196	498,842	1,222	9,277	-	13,874.75	13,874.75	.807	20.0
	1936	14,637	263,339	435	5,667	-	8,951.80	8,951.80	.612	16.0
	Total	51,741	1,227,478	3,297	24,255	-	36,590.56	36,590.56	.707	25.7
I.	1933	5,023	3,341	86	2,535	-	3,902.88	3,902.88	.777	0.7
	1934	35,224	34,352	420	5,610	15.00	8,562.52	8,577.52	.244	1.0
	1935	83,853	89,764	2,274	17,093	-	26,687.64	26,687.64	.318	1.1
	1936	66,927	62,781	3,109	10,076	-	16,155.29	16,155.29	.245	0.8
	Total	190,027	180,238	5,889	35,314	15.00	55,308.33	55,323.33	.291	0.9
Conn.	1933	38,865	218,428	109	7,838	-	11,602.41	11,602.41	.299	0.8
	1934	57,125	568,005	793	12,206	-	20,298.18	20,298.18	.355	5.7
	1935	70,862	878,544	5,070	17,972	-	29,582.31	29,582.31	.417	12.4
	1936	49,200	363,545	1,290	8,112	-	17,574.85	17,574.85	.357	7.4
	Total	216,052	2,028,522	7,262	46,127	-	79,057.75	79,057.75	.366	5.4
N.Y.	1933	35,536	1,138,649	183	27,990	-	41,286.50	41,286.50	1.23	54.3
	1934	141,290	5,191,069	4,972	60,364	2,600.00	96,053.48	98,653.48	.698	56.7
	1935	161,836	4,564,951	10,902	63,194	14,039.83	91,899.59	106,939.42	.655	28.2
	1936	209,803	5,235,545	10,974	93,776	7,624.06	153,601.68	161,225.74	.768	25.0
	Total	546,465	16,130,214	27,031	245,324	24,263.89	382,841.25	407,105.14	.745	29.5
Pa.	1934	381	19,795	304	247	-	346.50	346.50	.909	13.0
	1933	37,917	2,259,546	244	31,304	-	44,503.15	44,503.15	1.17	69.0
	1934	43,328	3,574,855	215	46,639	360.00	70,474.02	70,834.02	1.65	82.8
	1935	61,695	3,775,789	7,028	64,236	-	97,296.77	97,296.77	1.58	61.8
	1936	60,076	2,130,690	7,728	56,306	-	94,087.95	94,087.95	1.57	35.5
	Total	203,016	11,740,878	15,215	198,487	360.00	306,361.89	306,721.89	1.51	57.8
Totals	1933	246,318	8,211,114	5,127	122,620	-	182,142.33	182,142.33	.742	35.6
	1934	373,960	13,646,549	9,144	168,198	3,110.00	263,517.36	266,627.36	.713	36.0
	1935	509,329	13,946,415	27,848	220,661	14,039.83	336,492.49	350,532.32	.668	27.7
	1936	554,828	13,991,373	26,963	225,598	7,768.06	374,691.32	382,459.38	.689	25.8
	Total	1,683,435	49,795,451	69,082	737,077	24,917.89	1,156,843.53	1,181,761.42	.702	28.6

Basis of Costs: See Page 35.

COMPARISON BY STATES OF PER ACRE YIELDS FOR RIBES LEADICATION WORK
ECW PROGRAM - NORTHEASTERN STATES - 1935-1936, INCLUSIVE



12

COMPARISON BY YEARS OF PER ACRE VALUES FOR RIBES BRADLEYANUS
ECW PROGRAM -- NORTHEASTERN STATES -- 1933-1936 INCLUSIVE

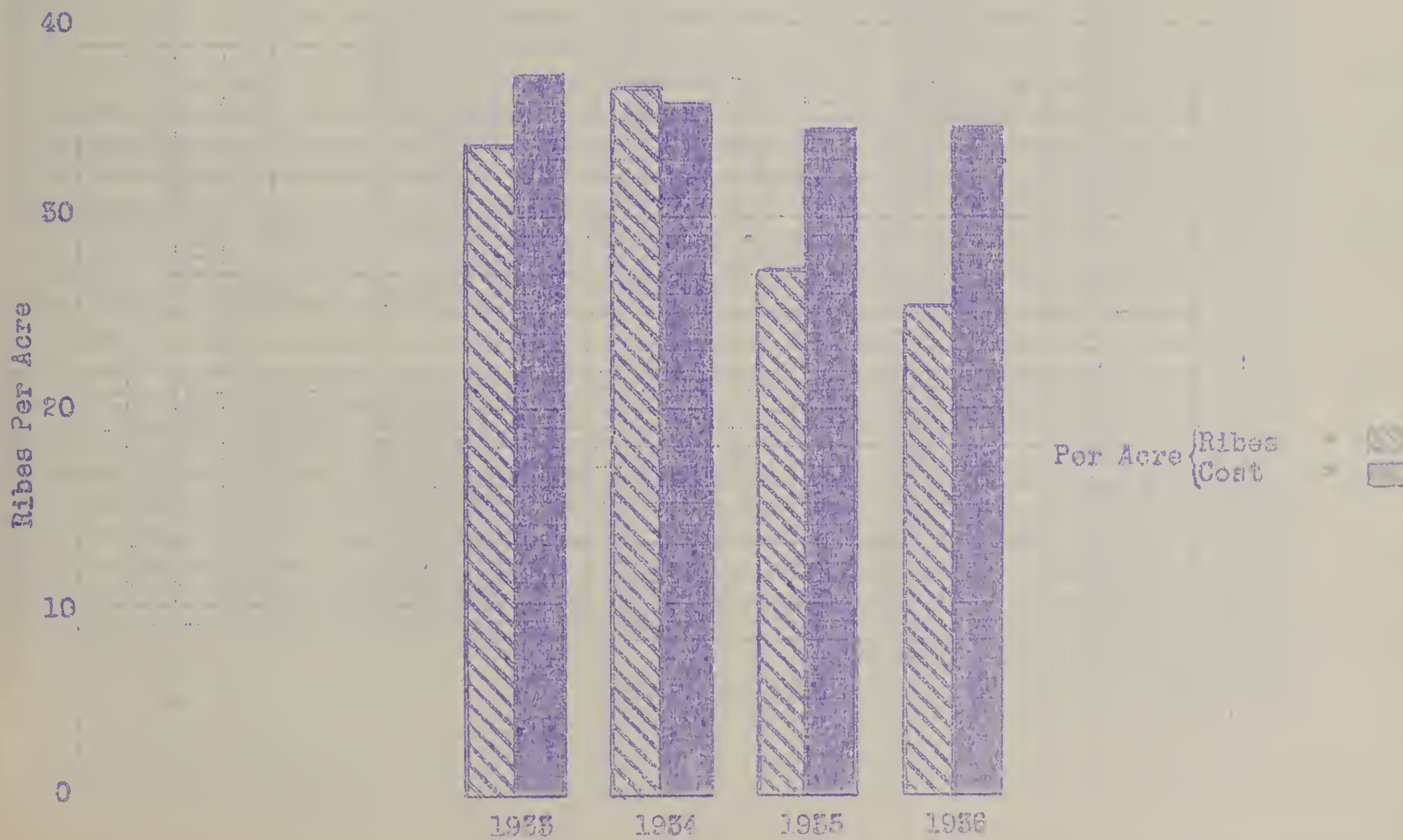
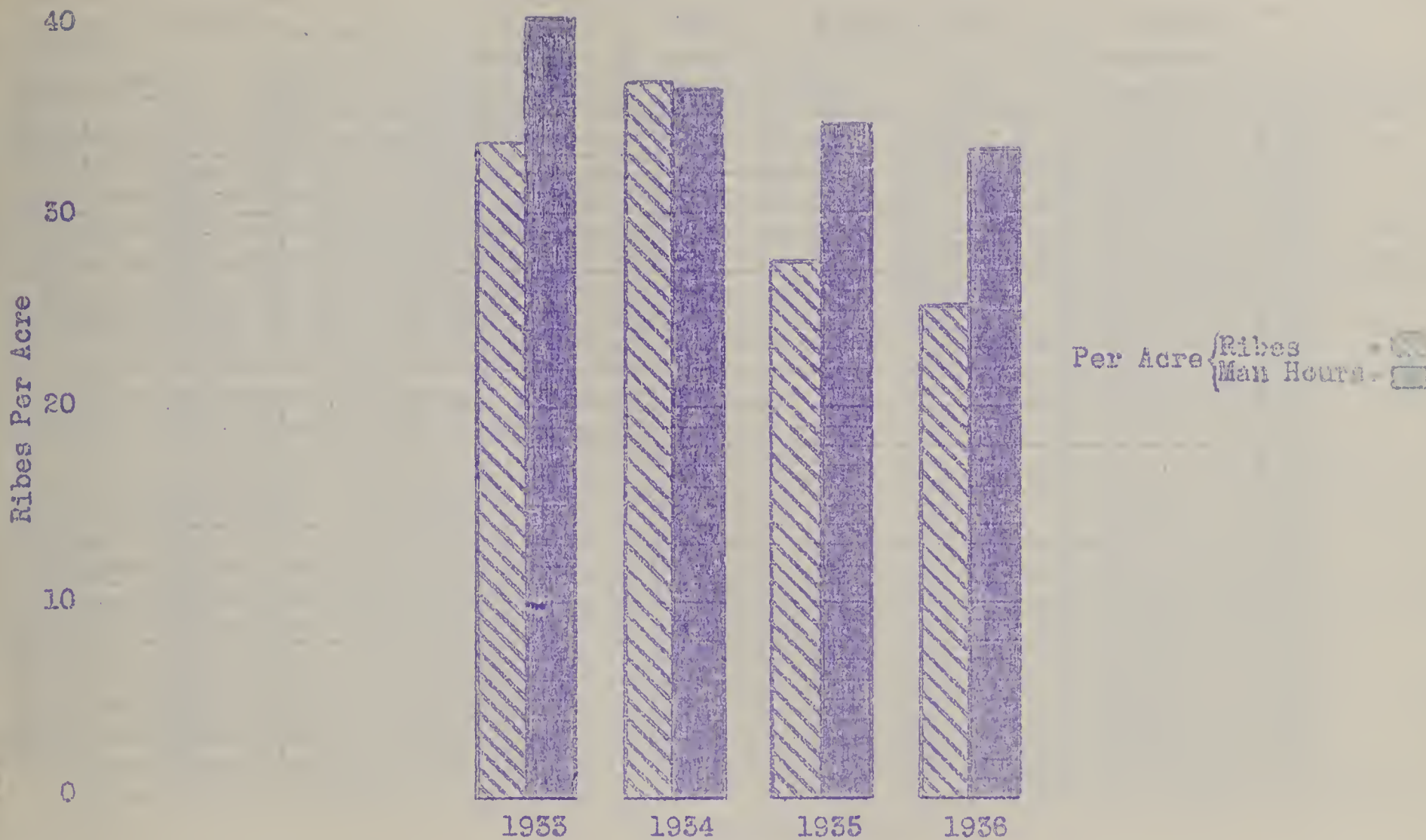


Table 26 - Ribes Eradication Work Performed on National Forests and Parks Under E.C.W.
 Program in Northeastern States During Period 1933-1936, Inclusive.

Initial Control Work

Project	Year	Total Acreage Worked	Ribes Pulled		Total Man Days	Total Cost (All ECW)	Per Acre		
			Wild	Cult.			Cost	Ribes	Man Days
Acadia National Park, Me.	1933	4,741	129,628	212	3,403	4,839.89	1.02	27.3	.72
	1934	5,387	126,349	30	2,834	4,754.01	.882	23.5	.53
	1935	605	48,737	51	740	1,233.63	2.04	80.6	1.22
	1936	984	49,550	-	799	1,340.96	1.36	50.4	.81
	Total	11,717	354,264	293	7,776	12,168.49	1.04	30.2	.66
White Mt. National Forest, N. H.	1933	786	42,005	-	982	1,353.43	1.72	53.4	1.25
	1934	99	92,460	-	558	802.32	8.10	933.9	5.43
	1935	285	490,830	-	717	1,075.50	3.77	1722.2	2.52
	1936	-	-	-	-	-	-	-	-
	Total	1,170	625,295	-	2,237	3,231.25	2.76	534.4	1.91
Allegheny National Forest, Penna.	1933	-	-	-	-	-	-	-	-
	1934	1,358	82,810	-	526	801.92	.591	61.0	.39
	1935	930	198,639	-	498	767.20	.825	213.6	.54
	1936	979	348,907	22	1,021	1,597.80	1.63	356.4	1.04
	Total	3,267	630,356	22	2,045	3,166.92	.969	192.9	.63
Totals	1933	5,527	171,633	212	4,385	6,193.32	1.12	31.1	.79
	1934	6,844	301,619	30	3,893	6,358.25	.929	44.1	.57
	1935	1,820	738,206	51	1,955	3,076.33	1.69	406.6	1.07
	1936	1,963	398,457	22	1,820	2,938.76	1.50	203.0	.93
	Total	16,154	1,609,915	315	12,058	18,566.66	1.15	99.7	.75

Re-Eradication Work

Acadia National Park, Maine	1933	2,328	14,956	-	1,010	1,583.34	.680	6.4	.43
	1934	304	1,064	-	141	240.25	.790	3.5	.46
	1935	2,789	9,682	-	1,122	1,871.58	.671	3.5	.40
	1936	2,460	7,104	-	743	1,246.55	.507	2.9	.30
	Total	7,881	32,806	-	3,016	4,941.72	.627	4.2	.38
White Mt. National Forest, N. H.	1933	1,858	129,136	-	860	1,410.65	.759	69.5	.46
	1934	1,322	92,103	-	453	679.26	.514	69.7	.34
	1935	65	47,850	-	165	247.50	3.81	736.2	2.54
	1936	-	-	-	-	-	-	-	-
	Total	3,245	269,089	-	1,478	2,337.41	.720	82.9	.46
Allegheny National Forest, Penna.	1933	-	-	-	-	-	-	-	-
	1934	-	-	-	-	-	-	-	-
	1935	501	35,788	-	392	581.91	1.16	71.4	.78
	1936	24	5,280	-	43	64.50	2.69	220.0	1.79
	Total	525	41,068	-	435	646.41	1.23	78.2	.83
Totals	1933	4,186	144,092	-	1,870	2,993.99	.715	34.4	.45
	1934	1,626	93,167	-	594	919.51	.566	57.3	.37
	1935	3,355	93,320	-	1,679	2,700.99	.805	27.8	.50
	1936	2,484	12,384	-	786	1,311.06	.528	5.0	.32
	Total	11,651	342,963	-	4,929	7,925.54	.680	29.4	.42

Basis of Costs: See Page 35.

These data are included in Tables 23 to 25.

ble 27 - Ribes Eradication Work Performed on National Forests and Parks Under E.C.W. Program in Northeastern States During Period 1933-1936, Inclusive.

Initial and Re-Eradication Work

Project	Year	Total Acreage Worked	Ribes Pulled		Total Man Days	Total Cost (All E.C.W.)	Per Acre		
			Wild	Cult.			Cost	Ribes	Man Days
Acadia National Park, Me.	1933	7,069	144,584	212	4,413	6,423.23	.909	20.5	.62
	1934	5,691	127,413	30	2,975	4,994.26	.878	22.4	.52
	1935	3,394	58,419	51	1,862	3,105.21	.915	17.2	.55
	1936	3,444	56,654	-	1,542	2,587.51	.751	16.6	.45
	Total	19,598	387,070	293	10,792	17,110.21	.873	19.8	.53
White Mt. National Forest, N. H.	1933	2,644	171,141	-	1,842	2,764.08	1.05	64.7	.70
	1934	1,421	184,563	-	991	1,481.58	1.04	129.9	.70
	1935	350	538,680	-	882	1,323.00	3.78	1539.1	2.32
	1936	-	-	-	-	-	-	-	-
	Total	4,415	894,384	-	3,715	5,568.66	1.26	202.6	.84
Allegheny National Forest, Penna.	1933	-	-	-	-	-	-	-	-
	1934	1,358	82,810	-	526	801.92	.591	61.0	.39
	1935	1,431	234,427	-	890	1,349.11	.943	163.8	.62
	1936	1,003	354,187	22	1,064	1,662.30	1.66	353.2	1.03
	Total	3,792	671,424	22	2,480	3,813.33	1.01	177.1	.66
Totals	1933	9,713	315,726	212	6,255	9,187.31	.946	32.5	.64
	1934	8,470	394,786	30	4,492	7,277.76	.859	46.6	.63
	1935	5,175	831,526	51	3,634	5,777.32	1.12	160.7	.76
	1936	4,447	410,841	22	2,606	4,249.81	.956	92.4	.66
	Total	27,805	1,952,878	315	16,987	26,492.20	.953	70.2	.67

Basis of Costs: See Page 35.

These data are included in Tables 23 to 25, inclusive.

The high per acre cost of the control work on the White Mountain National Forest was due chiefly to heavy concentrations of Ribes glandulosum, especially on the experimental forest at Bartlett, N. H. where a special effort was made to obtain as near 100% efficiency as possible. Part of this tract was initially cleared of Ribes in 1934, however when district leader Kane inspected the work he found the results unsatisfactory, primarily due to the inexperience of the E.C.W. personnel, including the technical personnel. The 1934 control area was re-worked during 1935 and the remainder of the tract initially examined for Ribes.

Table 23 - Supervision of Ribes Eradication Work Under E.C.W. Program
In Northeastern States, 1933-1936, Inclusive.

Year	No. Technical Foremen and Checkers	Man Days Worked By Technical Foremen and Checkers	Cost of Technical Foremen and Checkers					Total
			State	B.P.I.	N.R.A.	W.P.A.	E.C.W.	
1933	47	3,372					15,862.62	15,862.62
1934	36	2,191					12,320.73	12,320.73
1935	44	2,865					17,081.04	17,081.04
1936	29	2,300					15,218.41	15,218.41
Total		10,728					60,482.80	60,482.80
1933	42	2,864	103.13				12,782.73	12,885.86
1934	20	1,521	822.15				7,532.22	8,354.37
1935	16	1,069					6,002.23	6,002.23
1936	13	1,035	172.00				7,212.36	7,384.36
Total		6,489	1,097.28				33,529.54	34,626.82
1933	15	662		85.50			3,606.59	3,692.09
1934	9	727	941.00				3,265.60	4,206.60
1935	4	391					2,533.66	2,533.66
1936	4	325					1,617.50	1,617.50
Total		2,105	941.00	85.50			11,023.35	12,049.85
1933	3	424	204.82				1,870.21	2,074.83
1934	9	409					2,292.30	2,292.30
1935	11	570	4.12				3,259.91	3,264.03
1936	8	258				551.50	1,111.06	1,662.56
Total		1,661	208.94			551.50	8,513.47	9,273.71
1933	4	359					1,984.47	1,984.47
1934	5	588					3,055.32	3,055.32
1935	12	1,349					9,877.96	9,877.96
1936	4	590					3,567.30	3,567.30
Total		2,886					18,285.05	18,285.05
1933	12	1,105		1116.31	244.36		6,430.11	6,790.78
1934	13	1,199					7,464.70	7,464.70
1935	15	2,246					9,751.63	9,751.63
1936	9	1,384	1,208.47				5,263.14	6,471.61
Total		5,934	1,208.47	1116.31	244.36		27,909.58	30,478.72
1933	67	4,304	8,390.69				12,302.48	20,693.17
1934	121	8,062	11,451.63				35,255.40	46,706.92
1935	71	4,510					29,266.17	29,266.17
1936	94	8,605					46,735.31	46,735.31
Total		25,481	19,842.21				123,559.36	143,401.57
1933	45	4,037	1,103.69				15,011.62	16,115.31
1934	75	4,085	281.20				16,804.70	17,085.90
1935	92	4,869					29,090.85	29,090.85
1936	81	5,135	149.95				32,380.90	32,530.85
Total		18,126	1,534.84				93,288.05	94,822.89
1933	240	17,127	9,802.13	1201.81	244.36		68,650.83	80,099.13
1934	287	18,782	13,495.87				87,990.97	101,486.84
1935	265	17,869	4.12				106,643.43	106,647.55
1936	242	19,632	1,530.42			551.50	112,905.97	114,987.89
Total		73,410	24,832.54	1201.81	244.36	551.50	376,591.20	403,421.41

The costs of the technical foremen and checkers employed on Ribes eradication work under the E.C.W. Program were not charged against the project "Ribes Eradication" except in a few instances during 1933 when these supervisory men were used on Ribes scouting work on days when the C.C.C. crews did not work. In most instances, the technical foremen directed the work of from three to five crews of six men each. The E.C.W. foremen and

checkers were paid from \$100.00 to \$167.50 per month, the majority of them receiving from \$130.00 to \$140.00. Their costs, while engaged on blister rust control work, were charged to the project "Eradication Assistants and Checkers".

Nursery Sanitation - E.C.W. Program

E.C.W. crews have been used on special nursery sanitation work during the period 1933-1936, inclusive, in all of the Northeastern States, except New Hampshire, Massachusetts and New Jersey. Such initial Ribes eradication work was performed only during 1934 in the environs of one nursery in Connecticut. A total of 232 wild Ribes and 47 cultivated bushes were removed from 280 acres. This work required 33 man days labor by the C.C.C. personnel and cost \$65.28, or 23.3 cents per acre.

Table 29 - Ribes Re-Eradication Work in Connection With Nursery Sanitation Projects Under E.C.W. Program in Northeastern States, 1933-1936, Inclusive.

State	Year	No. Nurseries Worked	Total Acreage Worked	Ribes Pulled		Total Man Days	Cost			Per Acre	
				Wild	Cult.		State	E.C.W.	Total	Cost	Ribes
Maine	1936	1	247	7	-	43	-	68.83	68.83	.279	.05
Vt.	1934	1	700	1,500	-	174	417.90	108.00	525.90	.751	2.1
R.I.	1936	5	2453	21	10	35	-	102.29	102.29	.042	.01
Conn.	1933	1	237	690	-	292	-	519.45	519.45	2.19	2.8
	1934	1	275	1,601	-	118	-	196.64	196.64	.472	2.3
	1935	1	275	221	-	32	-	57.79	57.79	.210	0.8
	1936	2	636	422	4	73	-	178.80	178.80	.281	0.7
	Total	-	1423	2,934	4	515	-	952.68	952.68	.669	2.2
N.Y.	1935	1	630	17,750	-	182	318.40	255.50	573.90	.911	2.1
Penna.	1933	1	90	2,673	-	124	-	189.95	189.95	2.11	2.9
	1934	1	296	8,945	-	349	-	492.20	492.20	1.66	0.2
	1935	2	480	3,840	-	348	-	536.64	536.64	1.12	0.0
	1936	2	232	1,485	-	164	-	246.00	246.00	1.06	0.0
	Total	-	1098	16,943	-	985	-	1464.79	1464.79	1.83	15.4
Totals	1933	2	327	3,363	-	416	-	709.40	709.40	2.17	10.7
	1934	3	1271	12,046	-	641	417.90	796.84	1214.74	.956	9.2
	1935	4	1385	21,811	-	562	318.40	849.93	1168.33	.844	10.7
	1936	10	3568	1,935	14	315	-	595.92	595.92	.167	0.5
	Total	-	6551	39,155	14	1934	736.30	2952.09	3688.39	.563	8.0

Basis of costs: See Page 35.

Blister Rust Canker Elimination Work - E.C.W. Program

Blister rust canker elimination work under the E.C.W. Program in the Northeastern States has been restricted to Acadia National Park lands in Maine and state-owned white pine plantations in Pennsylvania. At Acadia National Park, such activities were started during 1932 under the regular cooperative program. Since 1933, the work has been continued each season with E.C.W. personnel. Excellent progress has been made on this project, and thousands of valuable scenic pines along roads and trails, and around camps, have been saved from unsightliness or destruction. (Table 30) Several excellent photographs illustrating the methods used on this canker elimination work will be found in a special report on the project prepared by Messrs. Parsons and Ingalls, who have analyzed of the two C.C.C. camps located on Mount Desert Island.

As indicated in Table 30, E.C.W. crews have been used in Pennsylvania during the fall, winter and early spring months from 1934 to 1936, inclusive, on blister rust

removal work in state plantations. Many of these plantings, made prior to the start of control activities in that state were severely infected with blister rust. Ribes eradication work since 1929 and the recent canker elimination activities have saved many thousands of these white pines which would have otherwise been killed.

Table 30 - Blister Rust Canker Elimination Work Under E.C.W. Program
In Northeastern States, 1933-1936, Inclusive.

State	Year	Est. No. Pines Examined	No. Fatally Infected Pines Cut Down	No. Pines Treated For Infection	No. Cankers Removed		Total Man Days	Cost (All E.C.W.)
					Branch	Stem		
Maine (Acadia National Park)	1933	10,000	849	1,951	6,045	286	409	920.46
	1934	23,625	145	581	1,675	66	159	318.85
	1935	3,000	325	1,737	7,802	671	352	552.30
	1936	16,100	1,341	3,192	8,983	1,436	1,000	1,500.00
	Total	52,725	2,660	7,461	24,505	2,459	1,920	3,291.61
Vermont	1934	42,566	3,012	9,537	176,874	-	807	1,385.00
	1935	207,848	15,435	40,731	180,788	-	1,892	3,307.02
	1936	210,102	9,141	24,374	94,774	-	1,529	2,887.31
	Total	460,516	27,588	74,642	452,436	-	4,228	7,579.33
Totals	1933	10,000	849	1,951	6,045	286	409	920.46
	1934	66,191	3,157	10,118	178,549	66	966	1,703.85
	1935	210,848	15,760	42,468	188,590	671	2,244	3,859.32
	1936	226,202	10,482	27,566	103,757	1,436	2,529	4,387.31
	Total	513,241	30,248	82,103	476,941	2,459	6,148	10,870.94

Basis of costs: Includes wages of E.C.W. personnel assigned to canker elimination work figured at rate of \$1.00 per man day for wages plus 35¢ per man per day for subsistence in 1933, 40¢ in 1934, and 50¢ during 1935 and 1936 - cost of crew transportation and miscellaneous expenses for supplies.

Pine and Control Area Mapping - E.C.W. Program

Pre-eradication survey work has been conducted under the E.C.W. Program in all of the Northeastern States, except Massachusetts and New Jersey at various intervals during the period 1933-1936, inclusive. In most instances, the work has been restricted to a radius of from 20-25 miles from the C.C.C. camps. The control maps have enabled the Ribes eradication foremen to readily locate the boundaries of control areas and thus limit their activities to crew supervision.

Thirty E.C.W. checkers in Maine, New Hampshire, Vermont, Rhode Island, Connecticut, and Pennsylvania were assigned to the mapping project from October, 1933 to April, 1934, inclusive. Similar mapping work was conducted by 91 E.C.W. employees in New York and the above mentioned states, except Vermont, during the period October, 1934 to April, 1935. Several enlisted men assisted the E.C.W. checkers on this work in New Hampshire and Pennsylvania. Due to a curtailment in the E.C.W. supervisory personnel, the services of the checkers in Maine were not available for mapping work after the close of the 1935 eradication season. From October to December, 1935, the E.C.W. personnel assigned to pre-eradication survey work was limited to two checkers in Rhode Island, six E.C.W. employees in one New York district, and 196 checkers and enlisted men in Pennsylvania. In 1936, seventeen E.C.W. employees did mapping work in New Hampshire, Vermont, Rhode Island, and New York at some time during the period from January to April and from October to December, while in Pennsylvania similar activities were performed by 123 checkers and enlisted men.

Table 31 summarizes the results accomplished on the E.C.W. pre-eradication projects. It was not possible to list the data by calendar years prior to 1936, as the records in most states were compiled by mapping seasons which extended from October to April, inclusive.

Table 31 - Pine and Control Area Mapping Under E.C.W. Program
In Northeastern States During Period 1933-1936, Inclusive.

State	Year	Acreage Mapped	Acreage Examined But Not Mapped	Miles Boundary Lines Painted	Total Man Days	Cost		
						State	E.C.W.	Total
Maine	1933-35	286,020	168,028	-	2,393	-	16,653.54	16,653.54
	1936	-	-	-	-	-	-	-
	Total	286,020	168,028	-	2,393	-	16,653.54	16,653.54
N.H.	1933-35	51,492	2,740	-	1,296	-	6,624.76	6,624.76
	1936	13,556	-	-	1,366	-	2,138.45	2,138.45
	Total	65,048	2,740	-	2,662	-	8,763.21	8,763.21
Vt.	1933-35	62,094	18,000	-	538	189.59	3,288.88	3,478.47
	1936	5,050	770	-	45	-	207.37	207.37
	Total	67,144	18,770	-	583	189.59	3,496.25	3,685.84
R.I.	1933-35	55,062	-	-	385	-	3,420.38	3,420.38
	1936	34,972	-	-	446	-	3,628.82	3,628.82
	Total	90,034	-	-	831	-	7,049.20	7,049.20
Conn.	1933-35	47,512	93,507	-	339	-	827.60	827.60
	1936	-	-	-	-	-	-	-
	Total	47,512	93,507	-	339	-	827.60	827.60
N.Y.	1933-35	3,406	16,676	-	126	-	252.00	252.00
	1936	3,757	10,791	-	284	-	426.00	426.00
	Total	7,163	27,467	-	410	-	678.00	678.00
Penna.	1933-35	138,084	-	967	13,103	-	45,874.01	45,874.01
	1936	46,887	-	457	6,514	-	26,210.40	26,210.40
	Total	184,971	-	1,424	19,617	-	71,884.41	71,884.41
Totals	1933-35	643,670	298,951	967	18,180	189.59	76,741.17	76,741.17
	1936	104,222	11,561	457	8,655	-	32,611.04	32,611.04
	Total	747,892	310,512	1,424	26,835	189.59	109,352.21	109,352.21

Basis of Costs: Includes actual salaries and transportation expenses of E.C.W. checkers assigned to mapping project - cost of enlisted mens' time figured on basis as listed in table 30 - cost of mapping supplies.

Table 39 Total Expenditures, By Cooperating Agencies, Under E.C.W. Program
In Northeastern States During Period 1933-1936, Inclusive.

State	Year	Expenditures By Cooperating Agencies					Total
		State Funds	P.W.A.	B.P.I.	W.P.A.	E.C.W.	
Maine	1933	-	-	-	-	52,630.56	52,630.56
	1934	135.00	-	-	-	47,050.48	47,185.48
	1935	-	-	-	-	71,053.78	71,053.78
	1936	-	-	-	-	71,116.77	71,116.77
	Total	135.00	-	-	-	241,851.59	241,986.59
N.H.	1933	103.13	-	-	-	50,069.93	50,173.06
	1934	822.15	-	-	-	28,484.02	29,306.17
	1935	-	-	-	-	24,989.41	24,989.41
	1936	316.00	-	-	-	29,734.87	30,050.87
	Total	1,241.28	-	-	-	133,278.23	134,519.51
Vt.	1933	-	-	85.50	-	12,757.37*	12,842.87
	1934	1,548.49	-	-	-	21,256.00	22,804.49
	1935	-	-	-	-	13,567.06	13,567.06
	1936	-	-	-	-	11,431.03	11,431.03
	Total	1,548.49	-	85.50	-	59,011.46	60,645.46
Mass.	1933	204.62	-	-	-	7,901.82	8,106.44
	1934	-	-	-	-	10,084.70	10,084.70
	1935	4.12	-	-	-	17,114.66	17,118.78
	1936	-	-	-	551.50	10,062.85	10,614.35
	Total	208.74	-	-	551.50	45,164.03	45,924.27
Conn.	1933	-	-	-	-	5,887.35	5,887.35
	1934	15.00	-	-	-	13,521.59	13,536.59
	1935	-	-	-	-	38,082.23	38,082.23
	1936	-	-	-	-	23,253.70	23,253.70
	Total	15.00	-	-	-	80,744.87	80,759.87
Rhode	1933	-	244.36	1,339.60	-	18,015.57	19,599.53
	1934	-	-	-	-	28,024.80**	28,024.80
	1935	-	-	-	-	39,755.73	39,755.73
	1936	1,664.72	-	-	-	23,306.29	24,971.01
	Total	1,664.72	244.36	1,339.60	-	109,102.39	112,351.07
N.J.	1933	8,541.54	-	-	-	53,588.98	62,130.52
	1934	14,051.52	-	-	-	131,308.88	145,360.40
	1935	14,358.23	-	-	-	121,673.26	136,031.49
	1936	7,624.06	-	-	-	200,762.99	208,387.05
	Total	44,575.35	-	-	-	507,334.11	551,909.46
Pa.	1934	-	-	-	-	346.50	346.50
	1933	1,103.69	-	-	-	65,102.99	66,206.68
	1934	641.20	-	-	-	104,447.47	105,088.67
	1935	-	-	-	-	155,215.45	155,215.45
	1936	149.95	-	-	-	155,812.56	155,962.51
	Total	1,894.84	-	-	-	480,578.47	482,473.31
Del.	1933	9,952.98	244.36	1,425.10	-	265,954.57	277,577.01
	1934	17,213.36	-	-	-	384,524.44	401,737.80
	1935	14,362.35	-	-	-	481,451.58	495,813.93
	1936	9,754.73	-	-	551.50	525,481.06	535,787.29
	Total	51,283.42	244.36	1,425.10	551.50	1,657,411.65	1,710,916.03

* In addition \$203.33 E.C.W. funds were expended under P.W.A. Program.
** " " 218.40 " " " " " " E.R.A. "

For basis of E.C.W. cost see explanation page 35.

Table 33 - Total Cooperative Expenditures, By Projects, Under E.C.W. Program
In Northeastern States During Period 1933-1936, Inclusive.

State	Ribes Eradication	Eradication Assistants and Checkers	Nursery Sanitation	Treatment Diseased Pines	Field Data		Total
					Mapping	General	
Maine	161,102.91	60,482.80	68.83	3,291.61	16,653.54	386.90	241,986.79
N.H.	91,129.48	34,626.82	-	-	8,763.21	-	134,519.51
Vt.	44,383.86	12,049.85	525.90	-	3,685.84	-	60,645.45
Mass.	36,590.56	9,275.71	-	-	-	60.00	45,926.27
R.I.	55,323.33	18,285.05	102.29	-	7,049.20	-	80,759.87
Conn.	79,057.75	30,478.72	1,017.96	-	827.60	969.04	112,351.57
N.Y.	407,105.14	143,401.57	573.90	-	678.00	150.85	551,909.46
N.J.	346.50	-	-	-	-	-	346.50
Penna.	306,721.89	94,822.89	1,464.79	7,579.33	71,884.41	-	482,473.31
Totals	1,181,761.42	403,421.41	3,753.67	10,870.94	109,541.80	1,566.79	1,710,813.03
% Total	69.1	23.6	0.2	0.6	6.4	0.1	100.0

BLISTER RUST CONTROL ACTIVITIES UNDER THE PWA (NIRA) CONTROL PROGRAM
IN THE NORTHEASTERN STATES

Allotment

PWA funds amounting to \$2,050,000 were allotted August 22, 1933 to the Bureau of Plant Industry, Division of Blister Rust Control, for work on other than Federal lands throughout the range of commercially important white pine. This money was available for expenditure until June 30, 1935, and a total of \$419,194.35 was provided for control activities in the Northeastern States. The expenditures in the respective states were as follows:

Maine.....	\$69,128.95
New Hampshire.....	68,597.21
Vermont.....	32,168.20
Massachusetts.....	52,071.89
Rhode Island.....	12,427.98
Connecticut.....	22,479.39
New York.....	92,334.23
New Jersey.....	3,081.48
Pennsylvania.....	45,474.63
Regional Supervision.	21,430.39

Purposes

The purpose of the NIRA Act was "to increase the consumption of industrial and agricultural products by increasing purchasing power, to reduce and relieve unemployment, to improve standards of labor and otherwise to rehabilitate industry and to conserve natural resources."

The specific purposes to which our allotment applied were summarized as follows:

1. To protect our natural resources of white pine from the blister rust by the systematic, thorough and efficient elimination of Ribes in definite areas.

2. To employ in the locality of the work as many of the unemployed as may effectively be used.

3. To distribute these unemployed opportunities for work as widely, geographically, and equitably as may be practicable.

4. To pay just and reasonable wages sufficient to provide for the hours of labor as limited, a standard of living in decency and comfort.

Responsibilities and Direction of Work

The PWA blister rust control work in each state was conducted under the general plan embodied in the cooperative agreement existing between the Bureau of Plant Industry of the U. S. Department of Agriculture and the cooperating state. In brief, the Bureau paid the salaries and expenses of one or more men who carried on control work in cooperation with the state forester in conjunction, when necessary, with the state officer administering the plant pest laws of the state. The Bureau assumed the responsibility for the technical phases of the work. The State Forester or other proper state official assumed administrative direction of these employees and of control work, made necessary reports, submitted properly authenticated payrolls, and otherwise served under formal federal appointment as collaborator without compensation. The state official administering the state plant pest laws enforced such state laws as were available for the effective prosecution of blister rust control work, and deputized the cooperative employees to permit the destruction of pine and Ribes as was necessary and as provided by the state laws. The cooperative agreement included a clause prohibiting the expenditure of Federal moneys as compensation for plants destroyed.

The Division of Blister Rust Control was made responsible for general organization and direction of the work and for the effective expenditure of the money. This responsibility was shifted December 1, 1933 to the Division of Plant Disease Eradication and Control of the Bureau of Entomology and Plant Quarantine, and the permanent blister rust control force was transferred to this new Division. The field activities were directly supervised by the permanent state and district leaders of this Division. General supervision was provided by the regional field office at Boston. The regular policy of the Department of Agriculture prevailed in the hire of the supervisory personnel. This included the hire of supervisors and foremen on the state leader's letter of authority without formality of appointment for a maximum of 30 days and also the appointment of such men as agents when employed for longer periods. Both groups of workers were definitely classed as supervisory personnel.

All administrative work in connection with accounting and disbursement was performed at Washington. The time sheets for the laborers were submitted weekly by the district leaders or supervisors direct to the Washington Office. The payrolls for the appointed men were prepared in the respective state offices and submitted semi-monthly to the Washington Office for payment.

Selection of Areas to Be Protected

The Ribes eradication work performed under the PWA program was limited to the following in order of preference:

1. Protection of white pine stands, nurseries, planting sites, recreational areas, etc., located on lands in state or other public ownership.
2. Lands in private or other ownership when control work on such lands was necessary in order to protect state or federal interests in the region.

3. Lands in private ownership when control work was applied to extensive blocks of land as a unit without regard to ownership lines:

- (a) Initial eradication work in territory where the need was greatest.
- (b) Reeradication work where urgently needed.

Preference was given to the best pine areas that were unprotected with due consideration to the locality where unemployment relief was most urgent. Every effort was also made to maintain willingness on the part of pine owners to cooperate in Ribes eradication in the future. The owners on whose lands the work was done were informed as to the necessity of maintenance of control.

Distribution of Work and Personnel Employed

Blister rust control activities under the PWA program were conducted in 68 counties of the Northeastern States. During September 1933, Ribes eradication work was performed in 39 townships and in all states except New Jersey and New Hampshire. A total of 616 laborers and strawbosses, 66 foremen and 8 supervisors were employed. Four of the latter men were assigned to Maine, two to Vermont and two to Connecticut. In Rhode Island and New York, about forty men were continued for two weeks in October. The laborers and strawbosses were given a total of 5,993 eight-hour man days of employment, while the foremen and supervisors worked 1,298 man days. During the period October 1933 to April 1934, inclusive, pine and control area mapping was conducted by 93 temporary PWA employees in all states, except New Jersey. The Ribes eradication project from May to September 1934 employed 1,154 laborers and strawbosses and 70 foremen for a total of 36,363 man days. In addition one supervisor was used in Connecticut and one in New York. This 1934 eradication work was performed in 178 townships and in each of the Northeastern States. During October 1934 to April 1935, the temporary personnel was reduced to 2 foremen in Pennsylvania, 2 in Massachusetts, and a maximum of 8 in New York. The small balance of PWA funds during May and June 1935 was sufficient to employ, in 50 townships, 434 laborers and strawbosses and 14 foremen for a total of 6,986 man days.

Since it was the purpose of the Nira Act to distribute work as widely as possible among the unemployed, blister rust control work on Nira funds was adapted to the widest possible labor use. The proportion of crew men to the supervisory force was, therefore, increased to the maximum consistent with effective work. The number of laborers per crew was increased from the normal 5 or 6 to a 13-man unit, consisting of a foreman, 2 strawbosses and 10 laborers. In most instances the crew was divided into two units, each working independently in adjoining blocks. The foreman divided his time between the two units, the strawbosses taking charge during his absence. Sometimes the crew functioned as a single unit with three or more of the men working behind the line. The crew activities were directed chiefly by the district leaders.

Because of the limitations and the net cash amount that was withdrawn from the regular blister rust control appropriation, it was necessary to transfer most of the permanent personnel to PWA funds during the period

from August 25, 1935 to April 30, 1936. Regular funds were used to pay a part of their salaries during May and June 1934, but all of the regular permanent force was paid from PWA money during the fiscal year 1935.

Procurement of Labor and Hours of Work

Labor was secured through the local offices of the public welfare agencies and the National Reemployment Service. Excellent cooperation was received and only in a few instances were unsuitable men provided. In such cases, the laborers were promptly discharged. The following specifications were established for the labor:

1. Physically able to walk all day.
2. No serious defects of eyesight.
3. Stable personality, good habits, good conduct, thoroughness, industriousness, reliability and willingness.

The laborers were hired without appointment on the state leader's letter of authorization for a maximum period of 150 days. The work of these men was limited to 8 hours in any one day and a maximum of 30 hours in any one week, except that working time lost because of inclement weather or unavoidable delays in any one week could be made up in the succeeding 20 days. Crew men and strawbosses were not paid for time lost due to weather or unavoidable delays unless such lost time was made up. In the application of the 30-hour week, usually 4 days of 7½ hours were found to be the most adaptable procedure. During the remainder of the week the supervisory force, employed on a 44 hour per week basis, was used effectively in eliminating non-pine areas, laying out control areas, advance scouting for Ribes, checking Ribes eradication, eradication of cultivated Ribes and in preparing maps and records.

PWA Wage Scale - Northeastern States

<u>Unskilled labor (30 hours per week)</u>	<u>Rate Per Hour</u>
Crew men.....	.50
Strawbosses.....	.60
<u>Supervisory Personnel (44 hours per week)</u>	<u>Rate Per Month</u>
Crew foremen.....	\$110-130
Checkers.....	110-130
Advance scouts.....	110-130
Supervisors.....	130-150

The supervisors were allowed a \$1.00 per diem in lieu of subsistence when away from headquarters for periods in excess of 24 hours.

Transportation

In most instances the PWA laborers traveled to and from work at their own expense. Due to the fact that they were receiving wages higher than local hourly rates, they were willing to pay their own travel expenses. Where transportation at PWA expense was necessary due to the distance involved, cars were hired by the trip or day and in some cases on mileage basis. No Federal trucks were used. However, the district leaders were provided with Government cars. The supervisors used their personally-owned machines on official work at the rate of five cents per mile.

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Accomplishments on Various Blister Rust Control Projects
Under PWA Program in Northeastern States

Ribes Eradication

Due to the acuteness of the unemployment situation in many localities at the time the money was made available in August 1933, it was decided to proceed with the Ribes eradication work in spite of the late date. Within a few days after approval of the project at Washington, crews were at work in all the Northeastern States, except New Hampshire and New Jersey, and the Ribes eradication work was continued into October in the States of Rhode Island and New York. It was possible to select areas where the Ribes were quite numerous and where defoliation had not advanced to a dangerous degree.

The Ribes eradication work during the fall of 1933 resulted in 24,023 acres (over 87 percent on individually-owned lands) being cleared of 694,187 wild Ribes and 228 cultivated bushes at a cost of \$29,143.47 or \$1.21 per acre. This cost includes the time of the foremen while directing the crew work. The high cost per acre may be attributed to the higher wages paid to the PWA personnel. The wage rate for laborers was 25 percent higher than the average rate paid for similar workers on the regular cooperative program. However, the laborers were limited to 30 hours per week. The PWA men also worked in sections where the Ribes were over twice as abundant as under average conditions on the regular program. The training of an inexperienced personnel and the necessity of doing especially careful work due to the partial defoliation of Ribes were other factors directly affecting the cost.

During 1934, 278,582 acres were eradicated of 7,199,796 wild Ribes and 11,627 cultivated bushes at a per acre cost of \$0.507. This cost was 58 percent less than that of 1933. The reduction can be attributed to better field conditions and experience of the workers, and to more effective organization and supervision of the project. The higher wage scale of the PWA work, however, kept the per acre cost considerably above that of the regular work. Also, most of the areas were worked by the crews in strip formation, since only a few scouts were employed, 4 in Maine and 17 scout-foremen in Massachusetts.

All costs of the 1934 control work under the PWA program in New Hampshire, Connecticut, and Pennsylvania were paid from PWA funds.

In Maine, the state paid for the services of four scouts (one in each of the agent districts) used in conjunction with the PWA crews, and also paid for transportation of the PWA crews in a few instances. One individual in Maine also contributed \$11.25 for additional labor used with a PWA crew working on his property.

In Massachusetts, 586 owners furnished labor equivalent to \$3,662.40 for work in connection with the PWA program. In this state, 17 PWA scouts were employed to supervise work in cooperation with individuals and eradicate the Ribes on areas where the bushes were too few to require crew work. Two 15-man crews were also employed in northern Worcester County during the entire season working principally in skunk currant concentrations, along stream courses. However, such control work was limited to the protection of pine areas which justified Ribes eradication even though the cost was above average.

In Vermont, Rhode Island and New Jersey, a small amount of state money was expended chiefly for PWA crew transportation. The state provided all of the foremen for the PWA crews in New York and paid some transportation costs, spending a total of \$7,287.15.

The work performed under the PWA program in cooperation with individuals in Maine and Massachusetts was not reported under the "Regular Cooperative Program", as it was thought advisable to include under the former program all projects where PWA money was expended. One exception was made to this procedure in Connecticut where a small amount of PWA money was spent for transportation under the ERA program.

The cost of the PWA control work includes wages of laborers, strawbosses, and scouts; total salaries of appointed foremen, and in a few instances expenses paid the foremen for official travel performed in their personally-owned automobiles; cost of equipment such as trail paper and picks; and crew transportation. However, such transportation costs were relatively small, as in most cases getting to and from work was regarded as the personal responsibility of the men concerned. This arrangement proved very satisfactory in most instances. Usually, at least two members of a crew had cars and the other men contributed small amounts for their transportation.

A comparison of the per acre values for the 1934 initial control work under the PWA program in the various states shows that in Maine, New Hampshire, Vermont and New York the average cost and Ribes per acre varied but very little, the former ranging from 52.6 cents in New York to 68.8 cents in Vermont, while the Ribes per acre averaged from 24.0 in Vermont to 38.4 in Maine. The high per acre cost in Massachusetts and Pennsylvania was due primarily to the large Ribes factor. Most of the initial work in Massachusetts was in heavy skunk currant concentrations in northern Worcester County. In Pennsylvania, the Ribes averaged 152 per acre and most of the bushes were of large size (*Ribes rotundifolium*). All of the PWA work in New Jersey was performed by one temporary scout, who pulled the Ribes in areas which did not require crew work. ECW labor was used to work the Ribes concentrations.

While the average cost of the reeradication work under the 1934 PWA program was only 29.8 cents for all states as compared with 69.5 cents for the initial eradication, several irregularities will be noted. Only one small area, a swampy site which originally contained thousands of *Ribes glandulosum*, was reworked in New Hampshire. Most of the areas reworked in Massachusetts had relatively few Ribes, which could be pulled by scouts. This resulted in a low per acre cost; whereas in Connecticut, it was necessary to use crews working in strip formation to remove the bushes which averaged nearly 40 to the acre. Although the Ribes averaged only 6.2 per acre on the reeradication work in Rhode Island, the bushes were located chiefly in swampy sites which were very difficult to examine.

The small amount of PWA work on Ribes eradication during May and June, 1935 in 50 towns resulted in a total of 1,113,669 wild Ribes and 821 cultivated bushes being removed from 39,906 acres at a cost of \$28,571.02 or 71.6 cents per acre. The increase of 20 cents per acre over 1934 costs is due in part to the small volume of work, and the extra cost of cleaning up odd jobs where Ribes were abundant.

All costs of the 1935 PWA control work in Vermont, Massachusetts, New Jersey and Pennsylvania were paid from PWA funds. State blister rust appropriation funds were used to supplement the PWA money in the other five Northeastern States. This state money was expended for hire of state foremen, crew transportation or supplies.

As a result of all Ribes eradication work under the PWA program, 342,511 acres were cleared of 9,007,652 wild Ribes and 12,676 wild bushes at a cost of \$199,095.54 or 58.1 cents per acre. (Table 37)

No satisfactory comparison of per acre values in the different states can be made due to variations in field conditions, size of Ribes, etc. However, the graph on page 62 indicates above average per acre man days in New York, Vermont and Connecticut even though in these states the number of Ribes pulled per acre was below the average. The per acre cost in Rhode Island was also high in comparison to the number of existing Ribes. In New York, the crews were frequently pulling large bushes and working in difficult sites. In Vermont and Connecticut the above average man hours per acre may be attributed in part to inadequate supervision. Only one district leader was employed in Vermont to supervise all control activities. In the fall of 1935, a state leader and two additional district leaders were appointed in order to prosecute the extensive WPA program in that state. Since that time, the supervisory force has been adequate to assure effective results. In Connecticut, the state leader is the only permanent employee, consequently supervision of Ribes eradication had been performed by temporary men who in some instances were not especially well qualified for the work.

Inspections of the field work in all states showed that on the whole good results were obtained. A large number of men received training in Ribes eradication work, and many of these men will be available for similar work in the future. The training should also enable many of these men, who are pine owners, to maintain blister rust control on their own properties. The control work under the PWA program extended protection to thousands of acres of valuable pine, which in many instances would not have been possible for the owners to protect under the existing economic conditions. Acute unemployment conditions were also materially relieved in many localities by the employment of these men on blister rust control work. The graph on page 138 shows that the per acre values for Ribes, man hours and costs under the PWA program are more closely comparable to those of the regular program than are the figures for the other emergency programs. In other words, from a blister rust control viewpoint, the PWA program was the most efficient of the various emergency programs under which our project has been conducted.

A detailed summary of the Ribes eradication work performed under the PWA program in the various states is given in Tables 34 to 37 . The accomplishments of the other blister rust control projects under this program, namely, nursery sanitation, Ribes nigrum elimination, pine and control area mapping and treatment of diseased white pines are shown in tabular form in Tables 38 to 40 . Expenditures are summarized in Tables 41 and 42 , page 66 .

Table 34 - Distribution of Work and Personnel Employed on PWA
Ribes Eradication Projects in Northeastern States

State	No. Towns Worked			Personnel Employed											
				Laborers and Strawbosses			Foremen			Supervisors			Total		
	1933	1934	1935	1933	1934	1935	1933	1934	1935	1933	1934	1935	1933	1934	1935
Maine	8	25	15	96	119	117	19	(1) 14	-	4	-	-	119	133	117
N. H.	-	17	16	-	132	165	-	11	5	-	-	-	-	143	170
Vt.	8	11	2	197	36	22	18	3	1	2	-	-	217	39	23
Mass.	7	29	3	79	(2) 610	44	8	19	3	-	-	-	87	629	47
R. I.	1	1	2	10	11	13	-	1	1	-	-	-	10	12	14
Conn.	6	3	1	83	26	12	6	3	1	2	1	-	91	30	13
N. Y.	4	66	7	24	124	34	4	(3) 10	1	-	1	-	28	135	38
N. J.	-	3	1	-	-	5	-	1	1	-	-	-	-	1	0
Pg.	5	23	3	127	96	22	11	8	1	-	-	-	138	104	23
Totals	39	178	50	616	1154	434	66	70	14	8	2	-	690	1226	416

(1) Includes 4 state scouts.

(2) Includes 586 individual cooperators who participated
in control work.

(3) Paid by the state.

Table 25.-Initial Ribes Eradication Work Performed Under F.W.A. Program
in Northeastern States During Period 1933-1955, Inclusive.
(Includes nursery sanitation and cultivated Ribes nigrum elimination projects)

Year	Total Acreage Worked	Ribes Pulled		Total Man Days	Cost				Per Acre		
	Wild	Cult.	Local Coop.	State	P.W.A.	Total	Cost	Ribes	Man Days		
1933	5,185	146,392	228	1266	-	31.50	5,229.20	5,260.70	1.01	28.2	.24
1934	49,469	1,901,014	1689	7109	-	1877.51	29,266.79	31,144.30	.630	38.4	.14
1935	5,540	148,578	27	914	-	590.53	3,363.14	3,953.67	.714	26.8	.16
Total	60,194	2,195,984	1944	9289	-	2499.54	37,859.13	40,358.67	.670	36.5	.15
1934	33,872	988,571	-	4758	-	-	19,915.45	19,915.45	.588	29.2	.14
1935	9,697	291,138	3	1374	-	12.10	6,040.07	6,052.17	.624	30.0	.14
Total	43,569	1,279,709	3	6132	-	12.10	25,955.52	25,967.62	.596	29.4	.14
1933	6,063	91,190	-	1440	81.00	-	6,112.58	6,193.58	1.02	15.0	.24
1934	10,240	264,004	-	1678	-	20.00	7,021.46	7,041.46	.688	25.8	.16
1935	1,540	11,171	-	391	-	-	1,625.49	1,625.49	1.08	7.3	.25
Total	17,843	366,365	-	3509	81.00	20.00	14,759.53	14,860.53	.833	20.5	.20
1933	1,751	117,166	-	665	-	29.53	2,889.22	2,918.75	1.67	66.9	.38
1934	7,049	640,763	138	1734	472.40	-	6,698.69	7,171.09	1.02	90.9	.25
1935	221	21,124	-	152	-	-	628.75	628.75	2.85	95.6	.69
Total	9,021	779,053	138	2551	472.40	29.53	10,216.66	10,718.59	1.19	86.4	.28
1934	19,556	468,446	1741	4349	-	3475.29	6,812.50	10,287.79	.526	24.0	.22
1935	812	25,307	-	383	-	869.08	1127.50	1,996.58	2.46	31.2	.47
Total	20,368	493,753	1741	4732	-	4344.37	7,940.00	12,284.37	.603	24.2	.23
1934	12,314	2,527	859	69	-	45.23	505.20	550.43	.045	0.2	.01
1935	422	4,331	251	57	-	-	227.00	227.00	.538	10.3	.14
Total	12,736	6,858	1110	126	-	45.23	732.20	777.43	.061	0.5	.01
1933	431	88,729	-	219	-	-	887.03	887.03	2.06	205.9	.51
1934	14,396	2,185,127	2164	6259	-	-	25,966.98	25,966.98	1.80	151.8	.43
1935	1,412	243,675	197	602	-	-	2,441.81	2,441.81	1.73	172.6	.43
Total	16,239	2,517,531	2361	7080	-	-	29,295.82	29,295.82	1.80	155.0	.44
1933	13,430	443,477	228	3590	81.00	61.03	15,118.03	15,260.06	1.14	33.0	.27
1934	146,896	6,450,452	6591	25,956	472.40	5418.03	96,187.07	102,077.50	.693	43.9	.18
1935	19,644	745,324	478	3873	-	1471.71	15,453.76	16,925.47	.862	37.9	.20
Total	179,970	7,639,253	7297	33,419	553.40	6950.77	126,758.86	134,263.03	.746	42.4	.19

Note: No initial control work performed in Rhode Island and Connecticut; also none in New Hampshire, New York and New Jersey during 1933.

Scale of costs: Includes actual cost of laborers, straw bosses, and foremen employed in locating and pulling Ribes; transportation of crews; and miscellaneous expenses for trail paper, picks, etc.

Table 36.--Re-Eradication Work Performed Under P.W.A. Program
In Northeastern States During Period 1933-1935, Inclusive.
(Excludes nursery sanitation and cultivated Ribes nigrum elimination projects)

State	Year	Total Acreage Worked	Ribes Pulled		Total Man Days	Cost				Per Acre	
			Wild	Cult.		Local Coop.	State	P.W.A.	Total	Cost	Ribes
Maine	1934	5,328	73,474	-	531	11.25	178.57	2,126.76	2,316.58	.435	15.8
	1935	3,846	152,407	48	606	-	320.04	2,342.93	2,662.97	.692	59.6
	Total	9,174	225,881	48	1137	11.25	498.61	4,469.69	4,979.55	.543	24.6
N. H.	1934	37	5,629	-	14	-	-	60.55	60.55	1.64	152.1
	1935	2,265	82,595	-	289	-	8.00	1,172.85	1,180.85	.521	56.6
	Total	2,302	88,224	-	303	-	8.00	1,233.40	1,241.40	.539	58.3
Vt.	1933	3,489	22,975	-	678	39.00	-	2,937.15	2,976.15	.85	6.8
	1934	4,925	82,913	-	685	-	-	2,736.54	2,736.54	.556	16.8
	1935	280	2,692	-	38	-	-	160.83	160.83	.574	9.6
	Total	8,694	108,580	-	1,401	39.00	-	5,834.52	5,873.52	.676	12.5
Mass.	1933	1,569	7,241	-	334	-	69.06	1,343.20	1,412.26	.90	4.4
	1934	85,382	133,480	1116	2,206	3190.00	119.95	5,648.00	8,957.95	.105	1.6
	1935	1,789	81,447	-	586	-	-	2,424.20	2,424.20	1.36	45.5
	Total	88,740	222,168	1116	3,126	3190.00	189.01	9,415.40	12,794.41	.144	2.6
R. I.	1933	290	247	-	110	-	-	627.72	627.72	2.14	10.0
	1934	6,502	40,378	112	1,091	-	260.54	4,459.29	4,719.83	.726	6.2
	1935	5,969	6,487	295	379	-	128.74	1,568.75	1,697.49	.284	1.1
	Total	12,761	47,112	407	1,580	-	389.28	6,655.76	7,045.04	.552	3.7
Conn.	1933	2,634	70,086	-	1,039	-	-	4,329.28	4,329.28	1.64	25.2
	1934	5,473	218,133	-	1,355	-	-	5,654.34	5,654.34	1.03	59.3
	1935	5,063	21,591	-	298	-	843.90	1,287.49	2,131.39	.421	4.2
	Total	13,170	309,810	-	2,692	-	843.90	11,271.11	12,115.01	.920	53.3
N. Y.	1933	1,376	73,521	-	335	-	-	1,358.59	1,358.59	.98	53.2
	1934	24,039	195,337	3808	4,523	-	3811.86	11,045.90	14,857.76	.613	8.1
	1935	1,050	21,126	-	270	-	729.32	658.50	1,387.82	1.32	20.1
	Total	26,465	289,984	3808	5,128	-	4541.18	13,062.99	17,604.17	.665	11.0
Penn.	1933	1,235	76,640	-	789	-	-	3,179.41	3,179.41	2.57	62.1
	Total	1,235	76,640	-	789	-	-	3,179.41	3,179.41	2.57	62.1
Totals	1933	10,593	250,710	-	3,285	39.00	69.06	13,775.35	13,883.41	1.31	83.7
	1934	131,686	749,344	5036	10,406	3201.25	4370.92	31,731.38	39,303.55	.298	5.7
	1935	20,262	368,345	343	2,466	-	2030.00	9,515.55	11,645.55	.575	18.2
	Total	162,541	1,368,399	5379	16,156	3240.25	6469.98	55,122.28	64,832.51	.399	6.4

No re-eradication work performed in New Jersey; none during 1933 in Maine and New Hampshire; and none in Pennsylvania during 1934 and 1935.

Basis of costs: Same as indicated in Table 35.

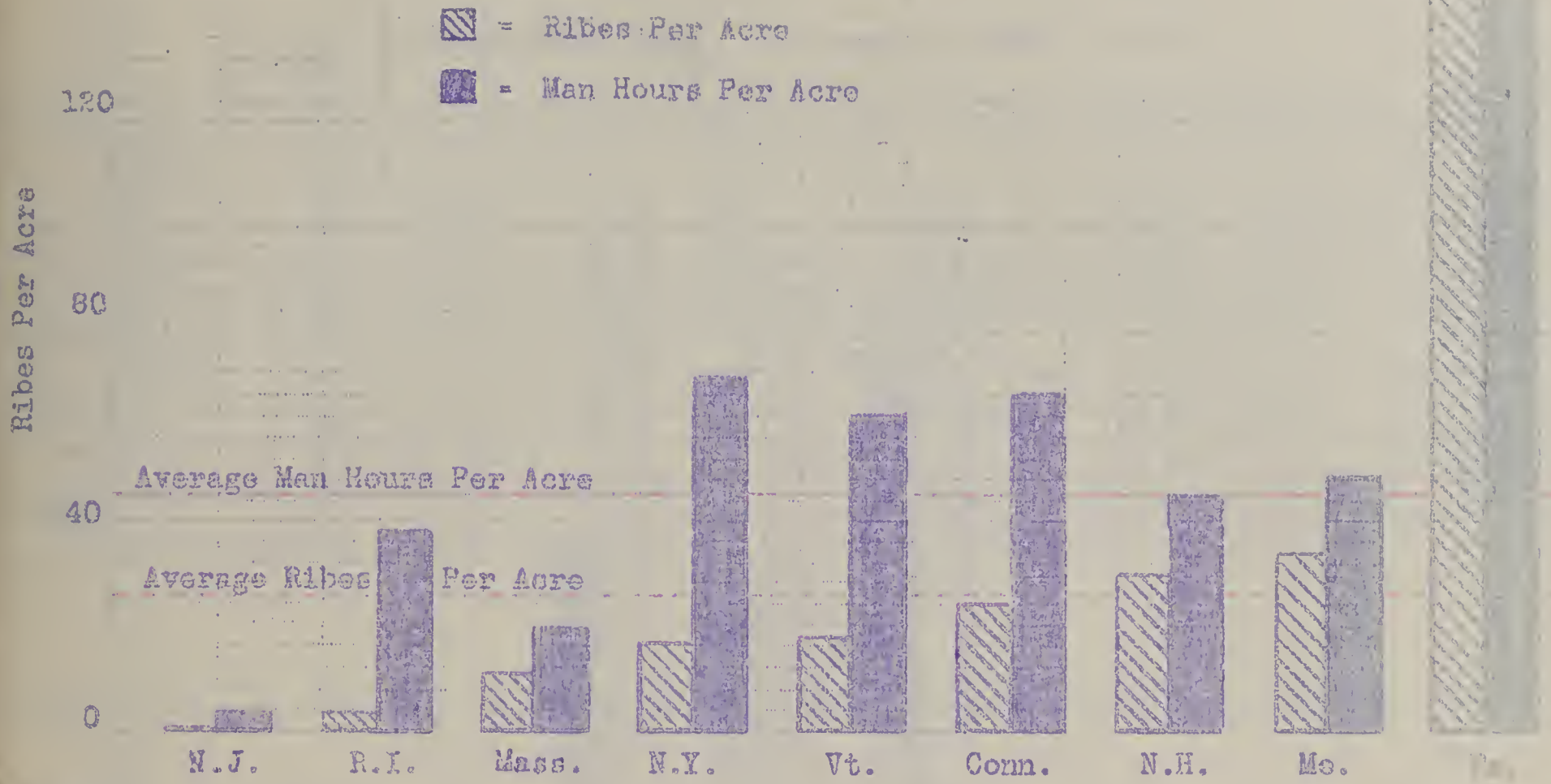
State	Total			Ribes Pulled			Total Man Days	Cost			Per Acre		
	Year	Average Worked		Wild	Cult.			Local Coop	State	P.W.A.	Total	Cost	Ribes Days
Maine	1933	5,185		146,392	228		1,286	-	31.50	5,229.20	5,260.70	1.01	28.2 0.24
	1934	54,797		1,974,488	1,689		7,640	11.25	2,056.08	31,393.55	33,460.88	.611	36.0 0.16
	1935	9,386		300,985	75		1,520	-	910.57	5,706.07	6,616.64	.705	32.1 0.13
	Total	69,368		2,421,865	1,992		10,426	11.25	2,998.15	42,328.82	45,338.22	.654	34.9 0.15
N. H.	1934	33,909		994,200	-		4,772	-	-	19,976.00	19,976.00	.589	29.3 0.14
	1935	11,962		373,733	3		1,663	-	20.10	7,212.92	7,233.02	.605	31.2 0.14
	Total	45,871		1,367,933	3		6,435	-	20.10	27,188.92	27,209.02	.593	29.8 0.14
	1933	9,552		114,165	-		2,118	120.00	-	9,049.73	9,169.73	.96	12.0 0.22
Vt.	1934	15,165		346,917	-		2,363	-	20.00	9,758.00	9,778.00	.645	22.9 0.10
	1935	1,820		13,863	-		429	-	-	1,786.32	1,786.32	.981	7.6 0.26
	Total	26,537		474,945	-		4,910	120.00	20.00	20,594.05	20,734.05	.781	17.9 0.13
	1933	3,320		124,407	-		999	-	98.59	4,232.42	4,331.01	1.30	37.5 0.30
Mass.	1934	92,431		774,243	1,254		3,940	3,662.40	119.95	12,346.69	16,129.04	.174	8.4 0.01
	1935	2,010		102,571	-		738	-	-	3,052.95	3,052.95	1.52	51.0 0.31
	Total	97,761		1,001,221	1,254		5,677	3,662.40	218.54	19,632.06	23,513.00	.241	10.2 0.20
	1933	290		247	-		110	-	-	627.72	627.72	2.14	.85 0.30
R. I.	1934	6,502		40,378	112		1,091	-	260.54	4,459.29	4,719.83	.726	6.2 0.31
	1935	5,969		6,487	295		379	-	128.74	1,568.75	1,697.49	.284	1.1 0.20
	Total	12,761		47,112	407		1,580	-	389.28	6,655.76	7,045.04	.552	3.7 0.12
	1933	2,634		70,086	-		1,039	-	-	4,329.28	4,329.28	1.64	26.6 0.39
Conn.	1934	5,473		218,133	-		1,355	-	-	5,654.34	5,654.34	1.03	39.9 0.10
	1935	5,063		21,591	-		298	-	843.90	1,287.49	2,131.39	.421	4.3 0.10
	Total	13,170		309,810	-		2,692	-	843.90	11,271.11	12,115.01	.920	23.5 0.20
	1933	1,376		73,521	-		335	-	-	1,358.59	1,358.59	.98	53.4 0.22
N. Y.	1934	43,535		663,783	5,549		8,872	-	7,287.15	17,858.40	25,145.55	.577	15.2 0.20
	1935	1,862		46,433	-		653	-	1,598.40	1,786.00	3,384.40	1.82	24.9 0.20
	Total	46,833		783,737	5,549		9,860	-	8,885.55	21,002.99	29,888.54	.638	16.7 0.20
	1934	12,314		2,527	859		69	-	45.23	505.20	550.43	.045	0.2 0.10
N. J.	1935	422		4,331	251		57	-	-	227.00	227.00	.538	10.3 0.10
	Total	12,736		6,858	1,110		126	-	45.23	732.20	777.43	.061	0.5 0.10
	1933	1,666		165,369	-		1,008	-	-	4,066.44	4,066.44	2.44	99.3 0.31
	1934	14,396		2,185,127	2,164		6,259	-	-	25,966.98	25,966.98	1.80	151.8 0.10
Penn.	1935	1,412		243,675	197		602	-	-	2,441.81	2,441.81	1.73	172.6 0.10
	Total	17,474		2,594,171	2,361		7,869	-	-	32,475.23	32,475.23	1.86	148.5 0.10
	1933	24,023		694,187	228		6,875	120.00	130.09	28,893.38	29,143.47	1.21	28.9 0.10
	1934	278,582		7,199,796	11,627		36,361	3,673.65	9,788.95	127,918.45	141,381.05	.507	25.8 0.10
Totals	1935	39,906		1,113,669	821		6,339	-	3,501.71	25,069.31	28,571.02	.716	27.9 0.10
	Total	342,511		9,007,652	12,676		49,575	3,793.65	13,420.75	181,881.14	199,095.54	.581	26.3 0.10

Basis of costs: Same as indicated in Table 35.

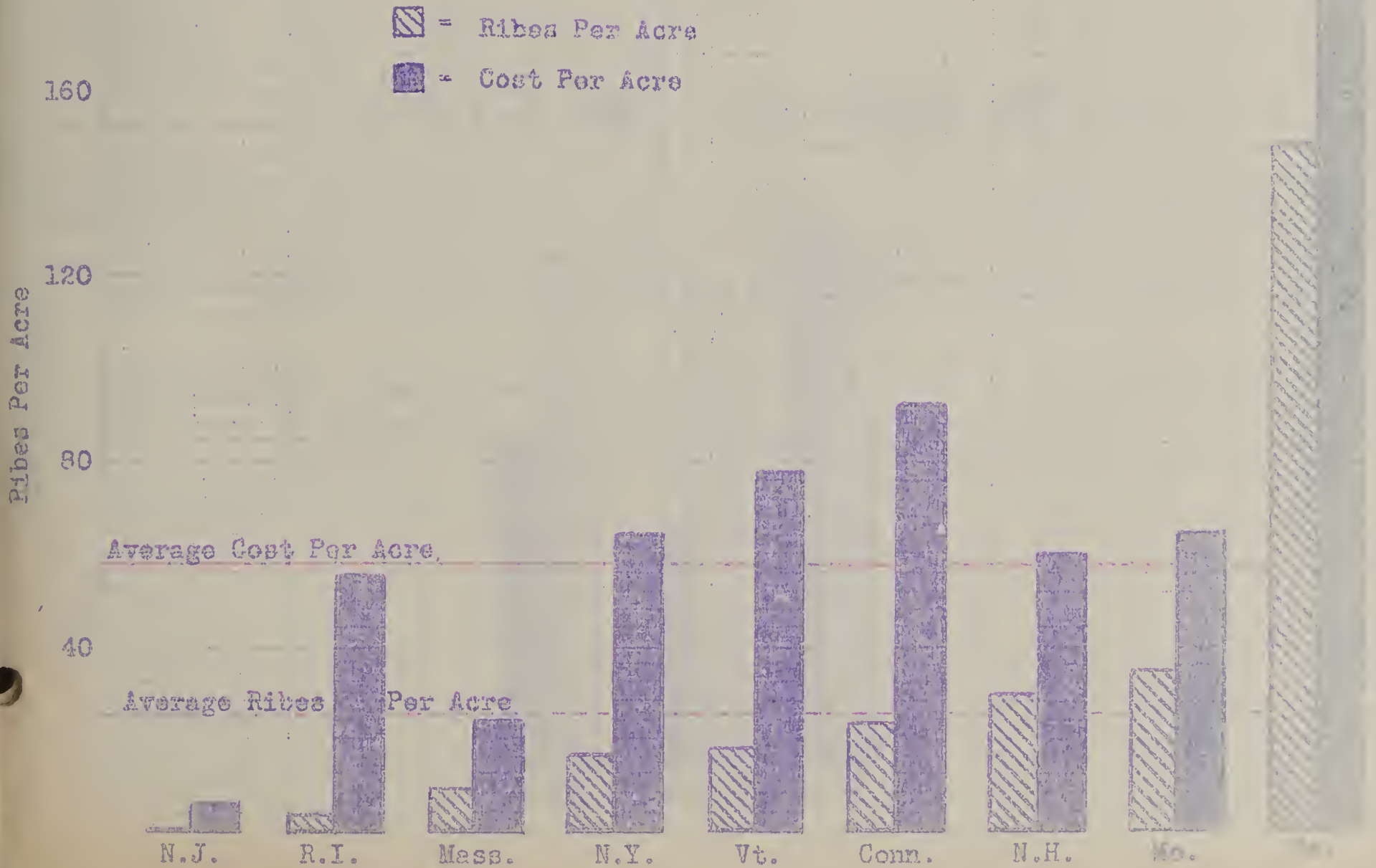
Note: No initial or re-eradication work performed in N.H. and N.J. during 1935.

PEI PROGRAM - NORTHEASTERN STATES - 1935-1936 INCLUSIVE

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COMPARISON BY YEARS OF PER ACRE VALUES FOR RIBES PRODUCTION WORK
FIA PROGRAM - NORTHWESTERN STATES - 1933 TO 1955, INCLUSIVE

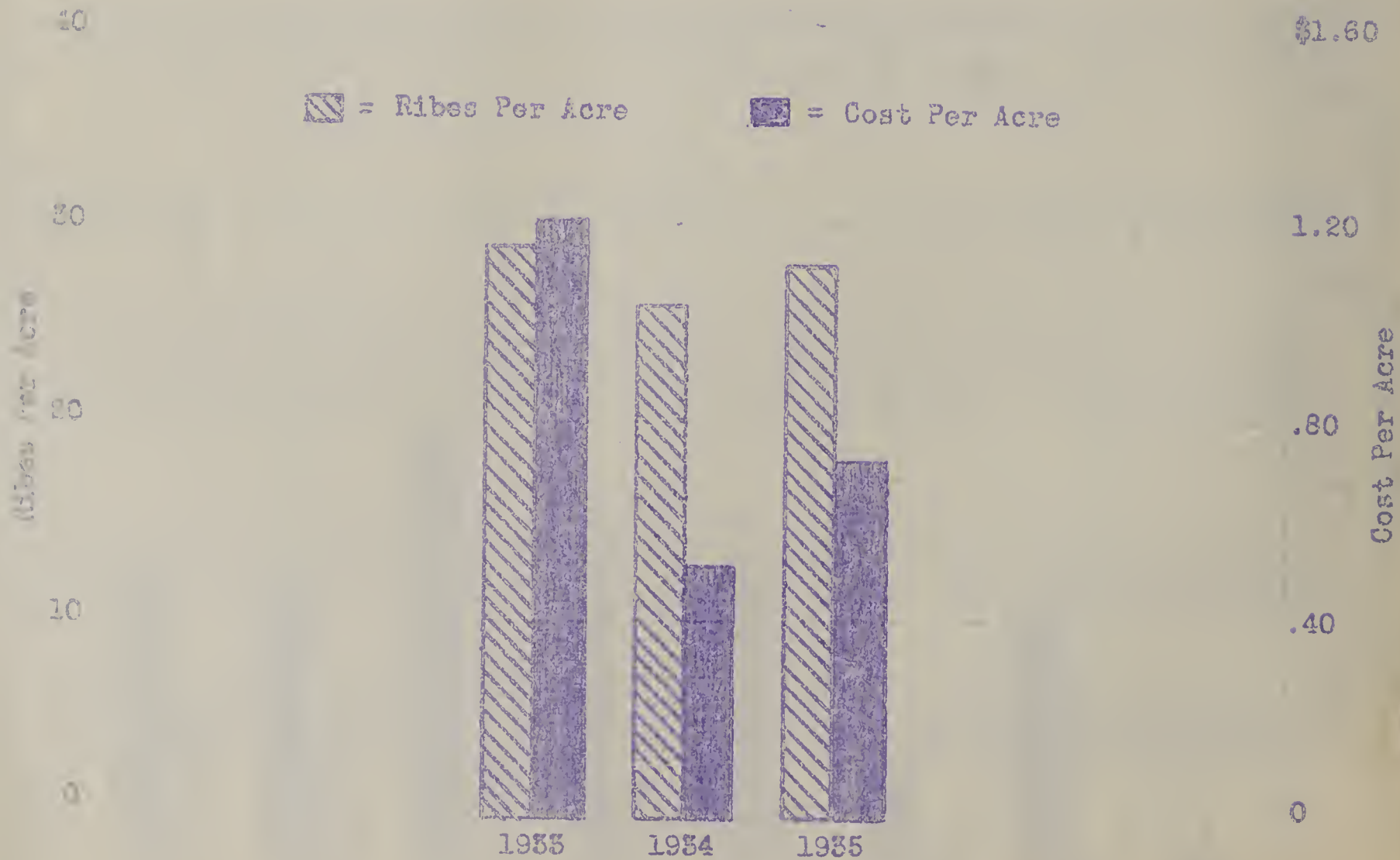
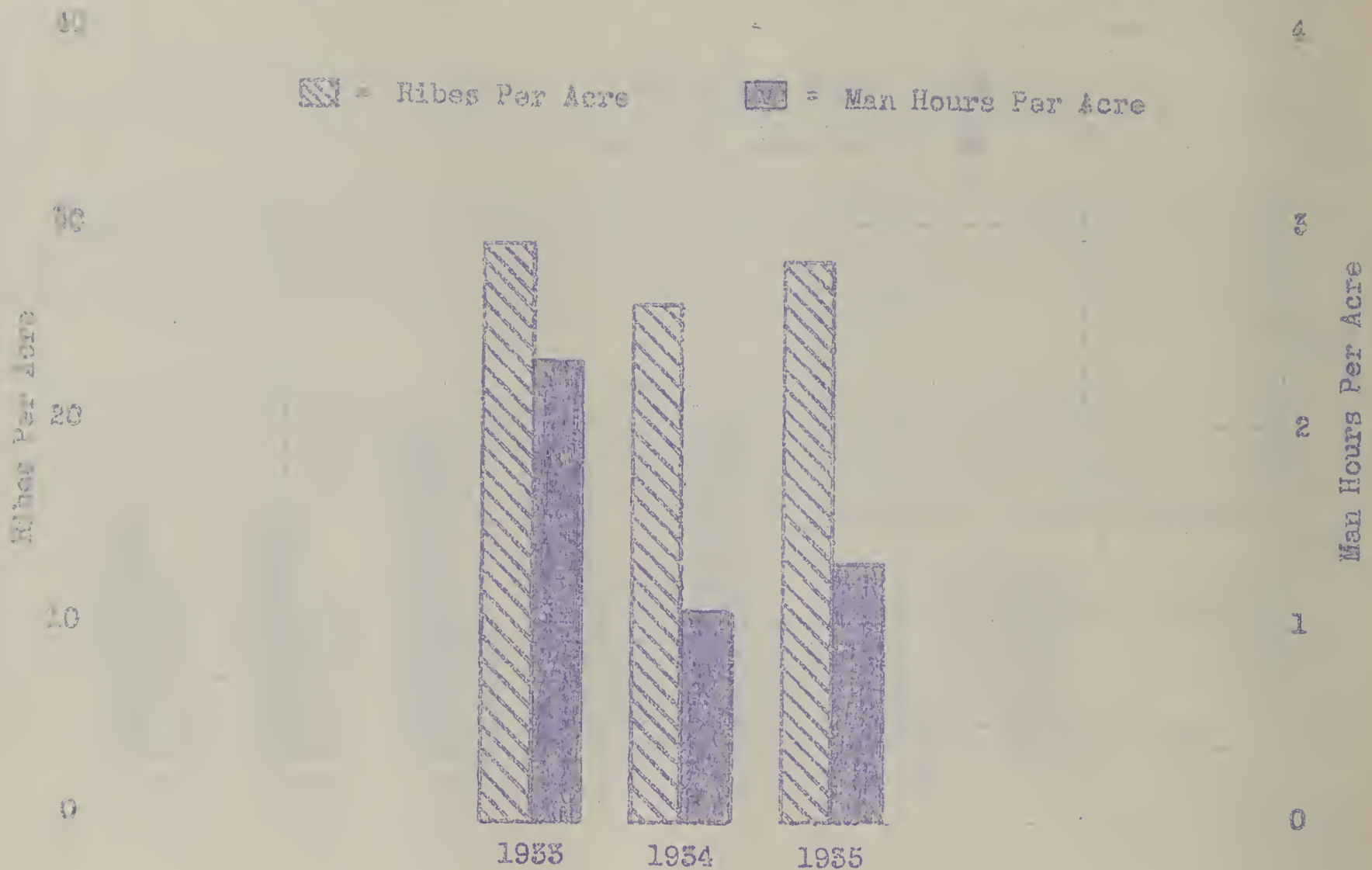


Table 38.--Summary of Nursery Sanitation Work Under P.W.A. Program
In Northeastern States - 1933 - 1935 Inclusive

By Years

Year	Type of Erad.	Acreage Examined	Ribes Pulled		Total Man Days	Cost				Per Acre	
			Wild	Cult.		Indiv.	State	P.W.A.	Total	Cost	Ribes
1933	Initial	84	2,540	-	63	-	-	264.55	264.55	3.15	30.2
	Re-Erad.	-	-	-	-	-	-	-	-	-	-
	Total	84	2,540	-	63	-	-	264.55	264.55	3.15	30.2
1934	Initial	331	23,057	3	84	30.75	7.00	315.34	353.09	1.07	69.7
	Re-Erad.	9,692	11,131	62	1,016	-	1,107.32	3066.50	4173.82	.431	1.1
	Total	10,023	34,188	65	1,100	30.75	1,114.32	3381.84	4526.91	.452	8.4
1935	Initial	-	-	-	-	-	-	-	-	-	-
	Re-Erad.	5,730	3,154	34	340	-	490.09	716.63	1206.72	.211	0.6
	Total	5,730	3,154	34	340	-	490.09	716.63	1206.72	.211	0.6
Totals	Initial	415	25,597	3	147	30.75	7.00	579.89	617.64	1.49	61.7
	Re-Erad.	15,422	14,285	96	1,356	-	1,597.41	3783.13	5380.54	.349	0.9
	Total	15,837	39,882	99	1,503	30.75	1,604.41	4363.02	5998.18	.379	2.5

By States

State	Type of Erad.	Acreage Examined	Ribes Pulled		Total Man Days	Cost				Per Acre	
			Wild	Cult.		Indiv.	State	P.W.A.	Total	Cost	Ribes
Maine	Re-Erad.	363	1,751	-	126	-	102.33	461.25	563.58	1.55	4.3
Mass.	Initial	41	22,802	-	54	30.75	-	195.34	226.09	5.51	68.1
R.I.	Re-Erad.	2,548	85	7	37	-	6.00	150.00	156.00	.031	0.0
Conn.	Initial	290	255	3	30	-	7.00	120.00	127.00	.458	0.9
	Re-Erad.	6,250	657	2	176	-	154.00	677.80	831.80	.133	0.1
	Total	6,540	912	5	206	-	161.00	797.80	958.80	.147	0.1
N.Y.	Re-Erad.	6,251	11,742	87	1,016	-	1,332.08	2,490.75	3822.83	.612	1.9
N.J.	Re-Erad.	10	50	-	1	-	3.00	3.33	6.33	.633	3.0
Penna.	Initial	84	2,540	-	63	-	-	264.55	264.55	3.15	30.2
Totals	Initial	415	25,597	3	147	30.75	7.00	579.89	617.64	1.49	61.7
	Re-Erad.	15,422	14,285	96	1,356	-	1,597.41	3,783.13	5380.54	.349	0.9
	Total	15,837	39,882	99	1,503	30.75	1,604.41	4,363.02	5998.18	.379	2.0

Basis of costs: Includes cost laborers, straw bosses and foremen employed in locating and eradicating Ribes in nursery sanitation zones - cost of crew transportation.
Year, type of eradication, state and number of nurseries protected as follows:
1933 - re-eradication - Pennsylvania 1; 1934 - initial - Mass. and Conn. one each, re-eradication Conn. 8 - New York 3, Maine 2 - Rhode Island 6; and 1935 - re-eradication - Conn. 10 - New York 1 and New Jersey 1.

Table 39.-Special Ribes Nigrum Elimination Work Under P.W.A. Program
In Northeastern States, 1933 and 1934, Inclusive.*

State	No. Properties Inspected	No. Patches Located	No. Ribes Nigrum Pulled	Man Days	Cost			
					Indiv.	State	P.W.A.	Total
Conn.	6,157	39	7,486	368½	777.00	62.25	560.04	1,379.29
N.Y.	1,000	0	0	6½	-	-	31.50	31.50
Mass.	6,157	39	7,486	375	777.00	52.25	581.54	1,410.79

*No work performed in 1935.

Basis of costs: - Includes actual cost of personnel employed in locating and pulling Ribes nigrum - cost of transportation.

In addition, a total of \$473.80 P.W.A. money was expended on special Ribes nigrum elimination work performed under the Regular Cooperative Program in Rhode Island during 1933. In Connecticut, P.W.A. funds totalling \$1,915.05 were expended on similar black currant elimination projects under the Regular, C.W.A. and E.R.A. Programs during 1933 and 1934.

Table 40.-Pine and Control Area Mapping Under P.W.A. Program
In Northeastern States During Period 1933-1935, Inclusive.

State	Acreage Mapped	Acreage Examined But Not Mapped *	Miles Boundary Lines Painted	Man Days	Cost		
					State	P.W.A.	Total
Conn.	215,714	384,810	-	805	-	6,538.14	6,538.14
N.Y.	106,636	-	-	1,664	-	9,443.25	9,443.25
Mass.	61,490	163,900	-	666	1,025.28	1,946.18	2,971.46
Verm.	20,654	18,485	44	537	-	2,898.14	2,898.14
N.H.	46,009	-	-	417	-	2,009.28	2,009.28
Me.	41,380	130,925	-	144	-	568.10	568.10
R.I.	200,623	244,408	-	2,384	-	14,559.60	14,559.60
Del.	32,207	-	183	296	-	1,266.87	1,266.87
Pa.	744,663	942,528	227	6,915	1,025.28	39,229.56	40,254.84

*Due to lack of sufficient pine to justify cost of control

Basis of costs: Actual cost of personnel assigned to pine and control area mapping work, transportation, and expenses for mapping equipment.

In Vermont, state funds were used to pay some of the mappers assigned to the P.W.A. project.

Blister Rust Canker Elimination

No blister rust canker elimination work was performed under the P.W.A. Program in the Northeastern States during the calendar year 1935.

In New York, 12 man P.W.A. crew was used during the period from September to November, 1935, removing blister rust infections from the pines in a 40 acre state plantation in the town of Bensonville in Greene County. The pines were pruned of lower branches to an average height of four feet, thereby eliminating a majority of the infections. All other visible branch infections were removed, and the trees with stem infections were cut down. No record was kept of the number of trees treated. A total of \$2,701.16 P.W.A. money and \$12.00 state funds was expended on this project.

Table 41.-Total Expenditures, By Cooperating Agencies, Under P.W.A. Program
In Northeastern States During 1933-1935, Inclusive.

State	State Funds	Towns	Indiv.	E.C.W.	P.W.A.	Total
Maine	3,100.48	-	11.25	-	69,128.95	72,240.68
N.H.	20.10	-	-	-	68,597.21	68,617.31
Vt.	1,045.28	120.00	-	203.33	32,168.20	33,536.81
Mass.	608.40	-	4,470.15	-	52,071.89	57,150.44
R.I.	415.28	-	-	-	11,954.18*	12,369.46
Conn.	1,035.89	-	-	-	20,081.78**	21,117.67
N.Y.	10,474.96	-	-	-	92,334.23	102,809.19
N.J.	66.10	-	-	-	3,081.48	3,147.58
Penna.	-	-	-	-	45,474.63	45,474.63
Totals	16,766.49	120.00	4,481.40	203.33	394,892.55	416,469.77

* In addition \$473.80 P.W.A. money was expended in conjunction with regular cooperative program in Rhode Island. ** An additional \$2,397.61 P.W.A. money was also expended in connection with the Regular, E.C.W., C.W.A. and E.R.A. Programs in Connecticut. P.W.A. expenditures for regional supervision not included in above table amounted to \$21,430.14.

Table 42.-Total Cooperative Expenditures, By Projects, Under P.W.A. Program
In Northeastern States During 1933-1935, Inclusive.

State	Super- vision & BRCAA	Ribes Erad.	Erad. Assis- tants and Checkers	Black Current Elimin.	Nursery sani- tation	Ribes Comp.	Treatment Diseased Pines	Field Data Mapping	General	Total
Maine	18,543.60	45,338.22	1,257.14	-	563.58	-	-	6538.14	-	75,443.58
N.H.	30,874.17	27,209.02	980.00	-	-	-	-	9443.25	110.87	69,017.24
Vt.	9,120.70	20,734.05	710.60	-	-	-	-	2971.46	-	31,536.81
Mass.	28,100.16	23,513.00	538.92	1379.29	226.09	247.45*	-	2898.14	247.59	57,150.44
R.I.	2,919.14	7,045.04	240.00	-	156.00	-	-	2009.28	-	10,369.46
Conn.	4,490.44	12,115.01	1,734.17	-	958.80	-	-	568.10	1251.15	21,117.67
N.Y.	48,233.75	29,888.54	1,305.75	31.50	3822.83	-	2713.16	14559.60	2254.06	102,809.19
N.J.	2,045.95	777.43	317.87	-	6.33	-	-	-	-	3,147.58
Penna.	11,023.52	32,475.23	444.46	-	264.55	-	-	1266.87	-	45,474.63
Totals	155,351.43	199,095.54	7,528.91	1410.79	5998.18	247.45	2713.16	40,254.84	3863.47	416,469.77
% Total	37.3	47.8	1.8	0.3	1.4	0.1	0.7	9.7	0.9	100.0

*Paid by state.

The expenditure of 37.3 percent of the money on "supervision and blister rust agent activities" was due to the fact that most of the regular appointed personnel was paid from FWA funds during the period August 23, 1933 to June 30, 1935. These men were, however, supervising not only FWA activities, but also projects under Regular, E.C.W., and other Emergency programs.

BLISTER RUST CONTROL ACTIVITIES UNDER THE WPA PROGRAM
IN THE NORTHEASTERN STATES

Allotments

WPA funds totaling \$2,023,711.00 were allocated for blister rust control work in the Northeastern States during 1935 and 1936. The allotments by states to December 31, 1936 were as follows:

Maine.....	\$346,562.00
New Hampshire.....	332,087.00
Vermont.....	194,843.00
Massachusetts.....	209,169.00
Rhode Island.....	27,612.00
Connecticut.....	57,327.00
New York.....	594,004.00
New Jersey.....	5,358.00
Pennsylvania.....	256,749.00

The figures listed above represent the aggregate amount of money provided through various allotments to each state. The original allotments were made July 25, 1935. On May 26, 1936, a recession was made in each state. The withdrawals were largely offset June 24, 1936 through increased allotments by the President. Again on July 13 and September 2, the President awarded additional money. Also during 1936, the Bureau, with the approval of the WPA, made certain adjustments in funds between states on August 24, November 27 and December 31. The homeopathic procedure in allotting funds made it somewhat difficult in planning field activities, but did not cause any serious complications.

Purpose of Allotments

The specific objectives have been outlined as follows:

1. To protect our national resources of white pine from the blister rust by the systematic, thorough, and efficient elimination of Ribes from definite areas.
2. To employ in the locality of the work as many of the persons on public relief as may effectively be used.
3. To distribute opportunities for work as widely, geographically, and as equitably as may be practicable.
4. To aid in all possible ways the accomplishment of the other purposes of the Emergency Relief Appropriation Act of 1935.

Economic and Social Value of Project

The white pine crop in the Northeastern States comprises over 7½ million acres and has a normal commercial value of \$315,000,000. Millions of white pines are also being planted each year in connection with reforestation activities. The scenic and recreational value of this crop is likewise of tremendous importance.

The WPA program has played an important part in the protection of this valuable pine crop from blister rust, since under this program 1,598,139 acres (containing 747,627 acres of white pine) have been cleared of Ribes bushes, the alternate host of the disease. Thousands of acres of pine reproduction have been protected, thus assuring the development of future commercial stands. The program has made possible the systematic working of large areas, rather than individual units. It has also permitted the application of control measures on lands where such work was urgent, rather than basing the selection on local cooperation. It has been possible to work many remote areas, also tracts containing an abundance of Ribes, where the cost of control had prevented prior application of protection measures. This control work has served to eliminate many sources of infection that otherwise would have persisted. The maintenance of protection on areas initially worked several years ago was also materially advanced by the WPA program, particularly in townships where such activities would have been impossible without emergency funds.

The expenditure to December 31, 1936 of \$1,960,436.02 WPA money on blister rust control in the rural portions of the Northeastern States has given 7,982 security-wage workers 3,664,695 man hours of useful self-respecting employment, directly benefiting persons who would otherwise have been on town relief, especially in communities where there was a lack of other projects of a permanent public benefit. Our project was especially adapted to the employment of relief labor. It provided healthy employment where skill, except for supervision, was not necessary. The location of the work was such, that in most instances, transportation was not required in getting the men to and from work. In fact, the entire cost to the Government for transporting security-wage workers up to December 31, 1936 amounted to only \$31,860.77. Most important of all, wages comprised 94.7 percent of the entire cost of the program. The expenditures have also materially aided in stimulating local business by increasing the amount of money in circulation.

Estimating that each of the 8,116 WPA employees that have worked on our project had three dependents, a total of 32,464 individuals were, at some time during the program, being fed, sheltered and clothed from wages earned in connection with this work. When the project was initiated very acute conditions in many communities were brought to our attention. Suffering from hunger was commonly noted. It was a frequent occurrence for workers to report for duty with little or no breakfast and without lunch or funds to provide one. The elimination of these conditions, which disappeared gradually as the workers received reimbursement for their services, had a social value impossible to estimate.

The successful performance of Ribes eradication work required the closest cooperation between the individual members of the field units. It has been the constant aim of the district leaders and the local supervisors to develop this cooperative spirit and their efforts have met with unusual success. This has not only measurably increased the efficiency of the work in hand, but the schooling that the workers have had in this cooperative effort should have a helpful effect upon them as members of the community in which they reside.

One of the outstanding indirect accomplishments of this work has been to demonstrate to many individuals that the Bureau requires of its personnel full attention to the duties at hand. Many of the laborers originally had the idea that public work in general was not too laborious; not too important perhaps. They have gained a far different understanding as a result of their experience on the blister rust control project. Workers who have been unwilling to carry out instructions have been dealt with summarily to the credit of public work in general.

The enforcement of regulations forbidding smoking in the woods has also had a marked effect on the men. It has effectively demonstrated the need for the exercise of care to prevent the destruction of our forests through the careless use of smoking materials.

The interest displayed by the average worker has been surprisingly keen, particularly when the foreman in charge has successfully stimulated a competitive spirit among the members of his crew.

Over 8,100 men have received training in Ribes eradication work, and many of these persons will be available for similar work in the future. The training should also enable many of these men to maintain control of blister rust on their own properties.

Responsibilities and Direction of Work

The WPA funds with which we are concerned were specifically allocated to the United States Department of Agriculture, the Bureau of Entomology and Plant Quarantine, for expenditure by the Division of Plant Disease Control. The work is handled directly by the Department cooperating with the State WPA and NRS officers for labor assignments and with the U. S. Treasury for accounting and disbursing.

The WPA blister rust control work in each state is performed under the general plan embodied in the Memoranda of Understanding existing between the Bureau of Entomology and Plant Quarantine of the United States Department of Agriculture and cooperating States, and is fitted in with other control activities in the states so as to make a unified, coordinated work program. The Bureau, however, carries direct responsibility for both the fiscal and the technical phases of the work. The state forester or other collaborator in the state is consulted as to policies and is kept fully advised at all times. The state official administering the state plant pest laws enforces such state laws as may be available for the effective prosecution of blister rust control work, and deputizes the cooperative employees to permit the destruction of such pine and Ribes as may be necessary and as provided by state laws. Federal money cannot be used to pay compensation for plants destroyed.

The Senior Pathologist of the Regional Office was made "Project Manager" for the WPA blister rust control program in the Northeastern States and was delegated the funds allotted for the respective nine states in the region. He was also given authority to obtain services and supplies and to incur expenditures under each state allotment. Letters of authorization were issued by the Bureau to him and to each state leader. These men in turn issued monthly sub-letters of authority where necessary to employees working under their direction.

Field Supervision

The successful results under the WPA program can be attributed in a large extent to the availability of a trained force of state and district leaders and supervisors to direct the project in each district. Through the services of these men, it was possible to get the WPA employees working in the field within a few days after funds became available. These leaders were accustomed to supervising large groups of men and had little difficulty in adapting themselves to the WPA program. Most of the district leaders (the

number varied from 30 to 27) have Civil Service status and were paid \$2600. per year. A few non-Civil Service leaders were paid from \$2000-\$2400. In addition, all of these men were allowed expenses when away from headquarters. The supervisors (maximum number 82) were paid \$135 per month plus reimbursement for use of their personally-owned machines on official work. The supervisors were not granted any per diem allowance and were employed only during the Ribes eradication season, except in a few instances where they were retained on mapping projects during the winter of 1935-1936.

Qualifications Established for Labor

In submitting requisitions for WPA labor in the field, the following qualifications were established:

1. Must be physically able to work all day.
2. No serious defects of eyesight.
3. Stable personality, good habits, good conduct, thoroughness, industriousness, reliability and willingness.

No restrictions were placed on the age of the workers, except the WPA regulation that none of the employees could be under 16 years of age. Regardless of relief status or any other consideration, WPA laborers were released when unable or unwilling to give full effort and value. The cooperation of the NRS and WPA offices usually prevented our project from being supplied with men obviously unsuited for the work to be done. It is estimated that at least 10 percent of the workers in 1935 had previous blister rust control experience, while during 1936 about 50 percent were experienced. In the field, only two classes of labor were employed, unskilled and skilled, the latter being the crew foremen.

Source of Labor

All labor was secured, prior to August 13, 1936, direct from the local offices of the National Reemployment Service, at least 90 percent of the workers being taken from certified relief rolls. One of the outstanding experiences in the entire WPA program has been the evidence of mutual cooperation between the NRS and our district leaders. The closest cooperation prevailed from the inception of the work. It was through the complete cooperation of the NRS that, at the beginning of the program, we were able to have workers in the field within a few days after the release of the allotments. This was a real accomplishment; when it is appreciated, that in most sections at that time not a single copy of the necessary WPA and NRS employment record forms had been received. The local offices of the NRS have cooperated with the district leaders 100 percent. The facilities of the local NRS offices have seldom been such that they could keep their records up to date. As soon as this fact was fully appreciated, our leaders immediately offered to interview listed men for the purpose of ascertaining their employment status at the time. It was only through the adoption of this procedure that we were able to procure the workers as needed. It also eliminated the needless preparation of USES 325 forms in cases where the registrants were employed, but had not notified the NRS to that effect.

After August 13, 1936, desired labor was obtained through the WPA organization. With few exceptions, good cooperation was evidenced at all times, but the service was not as prompt as under NRS. In Pennsylvania, one of the district WPA managers was reluctant to furnish the desired number of workers, because the men on our project were paid higher rates than those paid to the workers on local projects. The matter was reported to the state office of the WPA, but was never satisfactorily adjusted. To offset this condition, additional workers were employed in other sections of the state.

The 90-10 ratio between relief and non-relief workers was consistently maintained in each state, except during the period June 1 to August 28, 1936, when 406 workers were exempted from the 90-10 ratio in the States of Maine, New Hampshire and Vermont.

At the close of the 1935 Ribes eradication season Mr. Burgess, in charge of Gipsy and Brown-tail Moth control work, was advised as to the number of WPA workers we were releasing in each town. Consequently, many of these employees were transferred to his projects without interruption in their services. This arrangement materially aided Mr. Burgess in filling his quota of employees. Unfortunately for our project, these workers could not be released from the Gipsy and Brown-tail moth work when we needed them the following May. This past fall we again notified Mr. Burgess regarding the men whose services we planned to discontinue. However, due to a curtailment in funds, Mr. Burgess was unable to use any of the men we released.

Field Personnel

Funds for blister rust control work under the WPA program were made available July 25, 1935, and labor was being employed by July 29. During the first half of August, a total of 1,800 persons were on the WPA payrolls. For the next 2½ months the WPA personnel averaged 2,955 employees. During the period November 1, 1935 to April 30, 1936, the number of workers was reduced to an average of 443. The force averaged 4,146 employees during the eradication season from May 1, 1936 to September 30, 1936. From October 1 to December 31, 1936, the number of employees averaged 391. A peak number of 4,457 workers were employed from July 1-15, 1936, and the average number of employees was 1,937 per semi-monthly period during the entire program to December 31, 1936.

Table 43.-Employment on Blister Rust Control Under W.P.A. Program
(July 29, 1935 to December 31, 1936)

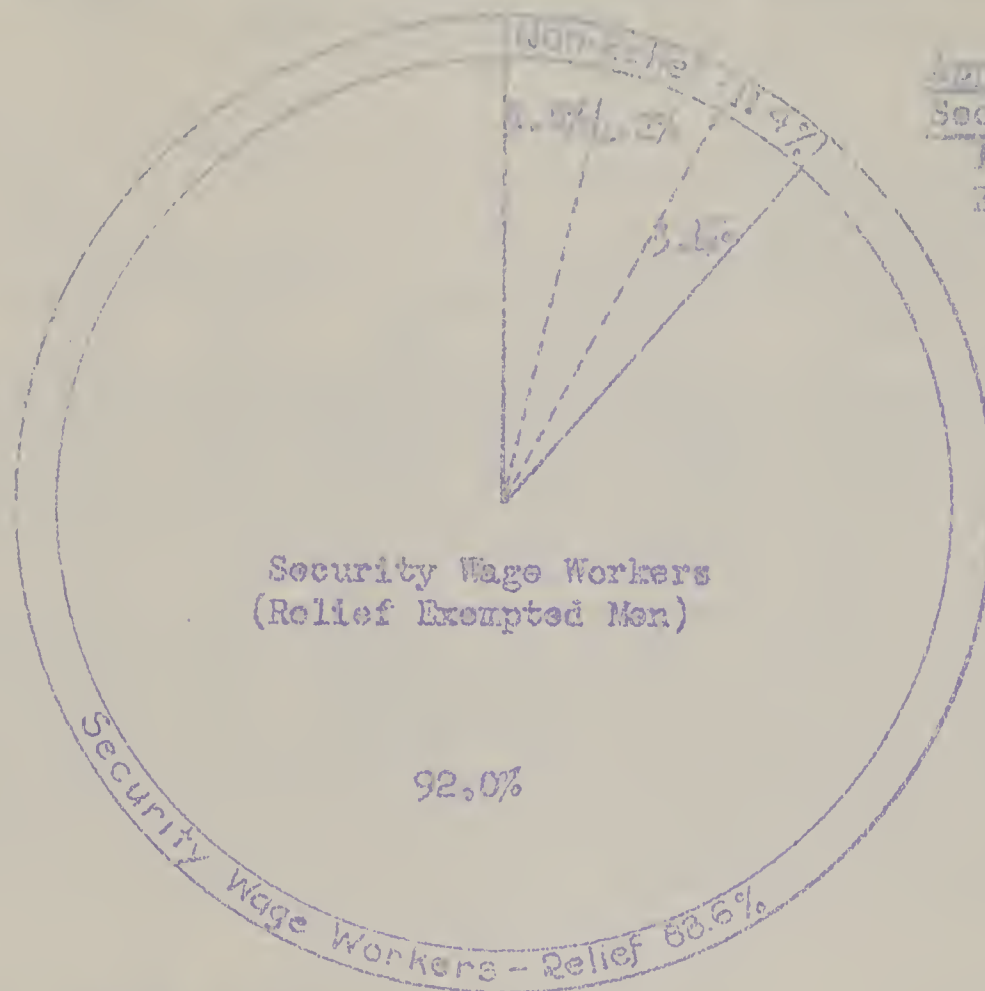
Security Wage Workers											
Relief				Non-Relief			Appointees*				
	Man Hrs.	Man Mos.	Man Yrs.	Man Hrs.	Man Mos.	Man Yrs.	Man Hrs.	Man Mos.	Man Yrs.	Man Hrs.	Man Mos.
line	588,892	4,574.9	381.2	55,891	435.3	36.3	35,328	184.0	15.3	680,111	519.5
H.	620,880	4,075.6	339.6	116,509	915.4	76.3	35,482	184.8	15.4	672,871	519.7
	382,670	2,939.5	245.0	40,175	312.1	26.0	22,771	118.6	9.9	445,616	350.2
ns.	294,726	2,289.7	190.8	8,821	68.4	5.7	26,362	137.3	11.4	329,909	255.5
	49,606	389.4	32.5	3,639	28.6	2.4	960	5.0	0.4	54,205	42.8
nn.	98,863	767.4	63.9	1,831	14.1	1.2	3,514	18.3	1.5	104,208	79.9
Y	986,976	7,671.6	639.5	37,462	291.5	24.3	63,091	328.6	27.4	1,087,529	839.7
J	7,728	60.9	5.1	-	-	-	1,308	6.8	0.6	9,034	7.1
onna.	448,508	3,696.0	308.0	21,518	177.2	14.8	31,084	161.9	13.5	501,110	395.5
total	3,378,849	26,465.0	2205.4	285,846	2242.6	187.0	219,898	1145.3	95.4	3,894,593	2985.4

* Includes time paid supervisors for all accumulated annual leave taken after completion of their field services.

Table 44.-Peak Employment and Man Year Cost on Blister Rust Control Under WPA Program
Northeastern States - July 29, 1935 - December 31, 1936.

State	Peak Employment		Man Year Cost		Man Month Cost	
	No. Men	Period	Over All (1)	Net (2)	Over All	Net
Maine	741	8/16-31 1936	783.12	811.62	65.26	67.30
N. H.	905	6/1-15 1936	747.90	775.59	62.32	64.30
Vt.	652	8/16-31 1936	682.81	707.75	56.90	58.90
Mass.	327	6/1-15 1936	938.39	992.84	78.20	81.70
R. I.	64	9/1-15 1936	749.37	757.96	62.45	63.16
Conn.	115	6/1-15 1935	832.78	851.97	69.40	71.00
N. Y.	1184	8/16-31 1936	836.59	871.14	69.71	71.80
N. J.	14	7/16-31 1935	881.54	935.25	73.46	75.20
Penn.	608	1936	734.50	765.22	61.20	63.70
Totals			788.02	819.44	64.57	66.12

- (1) Based on total expenditures divided by number of security-wage and appointees man-years.
(2) Based on total expenditures divided by number of security-wage man-years.



Total Man Months of Employment - 29,852.9

(Includes 406 men being exempted from 90-10 ratio in three states).

Table 45 - Man-Months of Employment by Relief and Non-Relief Employees
And the Status in Maintaining the 90-10 ratio

Total Man-Months Employment	Man-Months Surplus or Deficit Over 90-10 Ratio	Reason for Deficit
Relief	Non- Relief*	
4,574.9	610.8	-102.5
4,075.6	1,095.2	-642.4
2,939.5	426.8	-100.2
2,239.7	203.6	+ 50.8
389.4	33.6	+ 9.7
767.4	32.0	+ 53.3
7,671.6	609.5	+ 242.9
60.9	6.3	+ 0.5
3,626.0	331.4	+ 79.3
35,465.0	3,349.2	-408.6
		51 Non-relief laborers, exempted from 90-10 ratio, employed for 135.2 man months.
		233 Non-relief laborers, exempted from 90-10 ratio, employed for 621.3 man months
		122 Non-relief laborers, exempted from 90-10 ratio, employed for 264.4 man months.
		406 Non-relief laborers exempted from 90-10 ratio, employed for 1,020.3 man months.

* Also paid supervisors for accumulated annual leave totaling 1163 man days or 145 man months, taken after completion of their field services.

W.P.A. PERSONNEL - BLISTER RUST CONTROL
NORTHEASTERN STATES

July 29, 1935 to December 31, 1936

4000

3500

3000

2500

2000

1500

1000

500

0

Total Employees

Relief Labor

Ribes
Eradication

Ribes
Eradication

Non-relief labor

Appointees

Pine & Control Area Mapping

Pine & Control Area Mapping

No.	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
Year	1935						1936											

Hours of Work and Wage Scales

At the beginning of the WPA program, the maximum hours of work per month permitted WPA laborers on blister rust control was 130. The working schedule was established at twenty 6½-hour days per month. This arrangement was continued until March 16, 1936, at which time the maximum number of hours per month was reduced to 128 and the working schedule changed to 16 eight-hour days per month.

After conducting the program for about two months, we were advised that the wage scales would have to be approved by the respective state administrators. As a result of personal conferences with these men, uniform state rates, based on the highest county rate in the district where the project was being operated, were approved for each state. In some states, considerable difficulty was experienced in securing approval of the uniform rates, but the objective was finally accomplished in each state of the region. About July 1936, it was necessary to again contact the state administrators in order to obtain their approval of rates based on prevailing wages. The continuance of uniform state rates was approved in all cases. In four states, Maine, Connecticut, New York and Massachusetts, the 128-hour per month basis was continued, but it was established as follows in the other states: New Hampshire, 125; Vermont, 153; Rhode Island, 123; and Pennsylvania, 105.

In New Hampshire, the administrator approved the continuance of uniform rates until October 30, 1935. By that time we had completed our eradication work for the season. During the fall and winter months, he required county rates for unskilled workers, but agreed to the continuance of a statewide rate for the skilled laborers on our mapping project which employed only skilled men. The uniform state rate for skilled labor was used throughout the program, but during May 1-July 31, 1936, it was necessary to pay unskilled workers on the basis of county rates. These local rates were abandoned August 1, 1936 and state rates approved for all classes of employees.

In Massachusetts, the assistant WPA administrator held up final approval of uniform rates for several months due to his interpretation of the WPA regulations and their application. He was not convinced that our project had a physical continuity, even though the WPA office at Washington phoned him that the proposed wage scale would meet with their approval. However, he finally agreed to a uniform state rate.

The only other exception to the uniform state rates occurred November 15, 1936 in Pennsylvania where the state administrator required a reduction of the hours to 96 per month in a unit of four counties (Bradford, Wyoming, Centre and Susquehanna) situated in the northeastern part of the state, a considerable distance from the other contiguous counties in which the project was being conducted. As only this one new district was involved in these special rates, it did not complicate our office procedure to any appreciable extent.

Total		Total		Total	
Jan 1936		Jan 1936		Jan 1936	
		see above			
12/21/35	130	135.00	-	135.00	-
7/1/36	128	42.50	-	15.00	-
7/1/36	121	30.50	-	54.70	-
		Pennsylvania			
11/15/35	130	41.00	-	63.00	-
7/31/36	130	48.20	-	69.30	-
7/15/36	130	52.80	-	77.00	-
7/31/36	128	52.80	50.50	77.00	-
7/31/36	109	52.80	50.50	70.00	-
11/1/36	96*	12.00*	55.00*	63.00	-

Salary as Comptroller of Bradford, Wyoming, Dakota and Saskatchewan.

Secretary-stenographer at Harrisburg Office - \$43 per month - maximum 120 hours per month.

Made Up of Lost Time by WPA Labor

During the first few months of the program considerable confusion existed as to whether or not it was necessary to make up overtime time lost due to inclement weather. Effective January 11, 1936, 6 states were recorded as not requiring such lost time to be made up, but 5 states, New Hampshire, Massachusetts and Rhode Island, continued to require the making up of such lost time. A WPA regulation issued March 11, 1936 made it compulsory to make up lost time in all states. This procedure greatly complicated record work, as it was necessary to determine for each payroll the amount of overtime time and the amount of made up time. This condition continued until June 14, 1936, when instructions were issued that the WPA labor would be paid for the time actually worked.

Transportation

Each district leader was provided with a Government car for his use in connection with his supervisory duties. Most of these automobiles were of the coach type and were purchased prior to the WPA program. However, 13 new delivery machines were purchased from the Treasury and assigned to some of the district leaders whose cars were no longer serviceable for long trips. Instead of turning in their old automobiles, the cars were assigned to some of the supervisors for their use. No Government trucks were purchased for transportation of the WPA laborers because of the seasonal nature of our project.

At the inception of the program, the WPA management officer developed a transportation plan for the benefit of the laborer. However, the plan regarding transportation and other matters was so well known that only one of these matters was ever required. Transportation facilities were, however, limited to what was available at a given time and place and to the machines provided by the WPA.

cities and in some cases by the states. Instructions were issued to the supervisory force to provide transportation when the daily cost to the worker exceeded carfare, normally 20 cents per day. No complaints were received at the Cambridge Office from those workers who were not furnished transportation.

During the spring of 1936, an owner-operator basis was developed by the Cambridge Office. Under this procedure, the owner was paid not only for his personal services on the work but also for the use of his car. This method worked out very satisfactorily and was widely used during 1936.

Another procedure for the hire of trucks on a contractual basis was developed by the Cambridge Office in instances where the total payments under one agreement did not exceed \$300. Under this arrangement, contracts could be made without reference to the procurement officer. However, only a few contracts were made on this basis.

The entire cost to the Government for transporting security-wage workers up to December 31, 1936 amounted to only \$31,350.77. Table 46 lists the number of WPA laborers classified according to time consumed per day per employee in traveling to and from work on the blister rust control project in the Northeastern States.

All WPA workers on our project travel to and from work on their own time. Table 46 summarizes existing conditions by states. As indicated, 42 percent of the 4,229 workers rode to and from work at their own expense, 16 percent traveled in cars provided at Government expense, 19 percent used automobiles furnished by towns or counties, while only 1 percent walked. The time consumed in travel in the case of 41 percent of the total workers amounted to 30' or less per day per man, while 44 percent of the employees spent from 31' to 60' per day per man in travel. Only 15 percent used from 61' to 120' per day per man and only 20 percent of these workers, mostly in New York, rode at their own expense.

In Vermont, 90 percent of the 629 employees were transported at town or county expense; while in Massachusetts and New Hampshire, 50 and 10 percent, respectively, of the workers traveled in this manner. In New York, 23.6 percent of the 1,147 employees rode to work at their own expense; 572 of these men required 30' or less per day per man for travel, 267 from 31' to 60', and 120 from 61' to 120'. Practically all members of the small force employed in New Jersey and Rhode Island traveled at their own expense, the time required being less than 1 hour per day per man. About half of the employees in Pennsylvania and Massachusetts also followed a similar procedure.

In Maine and Connecticut, 79 and 82 percent, respectively, of the workers rode in cars provided by the Government; while in New Hampshire and Pennsylvania the percentages of the total number of men traveling in this manner amounted to 63 and 49 percent, respectively.

WPA Workers

During the winter of 1935-36, the WPA workers were provided with all the necessary equipment in the Northeastern States. The workers were provided with the necessary equipment of the winter season and the necessary the amount of the WPA workers. Only a few workers were provided with the necessary equipment and the necessary equipment was not provided for the workers until November 1935, since the machines were not owned by the WPA and the cars were parked off the roads. At Mr. Butcher's suggestion, a car was purchased and used during the winter of 1936.

Injuries and Compensation to WPA Workers

During the period July 30, 1935 to December 31, 1936, a total of 8,116 workers were employed for 3,884,593 man hours. In spite of the large number, only 342 injuries were sustained. Only one death occurred and this was from meningitis which resulted from a twig being forced into the ear. Another worker is in a serious condition as a result of being accidentally shot by a fellow worker. One-third of all alleged injuries was due to poisoning chiefly from poison ivy. About 32% of the injuries represented sprains and bruises chiefly to feet, legs and back. Only one of the sprains was of a serious nature. Of 60 organic injuries, 16 represented injury to eyes, but there was no case where the sight was lost. Only 3 cases of fracture were reported. A total of 50 cases of infection occurred due chiefly to thorns being forced into various parts of the body, mostly the hands and fingers, but only in one instance was the consequence serious. Only one automobile accident involving injury to employees was recorded. The leg of one of the workers riding in a state car was broken.

Table 47 - Personnel Employed and Classification of Alleged Injuries Sustained by WPA Workers in the Northeastern States July 30, 1935 to December 31, 1936, Incl.

State	Total No. Men Employed	Total Man Hours	No. Alleged Injuries by Classes						Total Injuries
			Poison Ivy	Infec- tions	Blood Poison- ing	Frac- tures	Sprains and Bruises	Organic	
Maine	1,359	680,111	9	5	1	-	7	3	25
N.H.	1,599	672,871	15	5	-	-	24	8	52
Vt.	1,218	445,616	25	25	1	3	29	17	100
Mass.	605	329,909	15	3	-	1	13	11	43
R.I.	107	54,205	-	-	-	1	2	-	3
Conn.	221	104,208	2	1	1	-	-	1	5
N.Y.	1,986	1,087,529	35	7	-	1	23	11	80
N.J.	23	9,034	-	-	-	-	-	-	0
Pa.	998	501,110	12	4	-	2	10	6	34
Totals	8,116	3,884,593	113	50	3	6	108	60	342
Percentage of total injuries			33.0	14.6	.9	2.3	31.6	17.6	100

48.

WILLIAMS, L. B. to Bureau 11, 1937

	No. Days Work Compensation	Total Amount Paid	Per Diem For Case
Travel	5	\$ 14.99	\$ 5.00
Food and Lodging	5	11.68	5.21
Laundry	10	264.09	13.92
Telephone	2	15.04	7.92
Medical Expenses	1	165.00	165.00
Transportation	1	6.67	6.67
Gas	11	359.17	32.65
Post Office	0	0	0
Traveler's Expense	7	338.33	112.77
Total	49	\$1,236.67	\$ 25.24

No records are available from the Compensation Commission as to the cost of care of the injured workers.

Addition of the Regional Office

(Especially as related to the WPA Program)

After the advent of the emergency programs, the personnel of the Regional Office was limited to the senior psychologist, an assistant and a stenographer. The activities were confined chiefly to general supervision of District case control in the Northeastern States. The office work consisted of the preparation of budgets and plans of work, summarization and analysis of work done and accomplishment, and the preparation of weekly and monthly progress and progress reports. In addition, annual reports were prepared summarizing the results accomplished under each project in each of the States of the Northeastern Region. Proper records were also kept at the Regional Office. The Regional personnel in the Northeastern States consisted merely of a state leader in each of the nine states and a total of 29 district leaders. The payroll, expense accounts and 1035 forms for these men were handled at the Washington Office.

During the WPA program several hundred laborers were employed on Federal work in addition to the unemployed men. The time sheets for the laborers were sent to the Washington Office where the payrolls were prepared and submitted for payment. The same applied to expense accounts and 1035 forms. However, under the WPA program, which began July 29, 1935, practically all office work in connection with this program was assigned to the Regional Office. The office was composed of the following items:

Transmittal of belated, plain, commercial and technical work; preparation of payrolls for a season of 1,107 men; receiving and accounting for a surplus of 116 appointed men and 75 laborers operating personally-owned machines on a four-cent per mile basis; auditing all 1934 vouchers for contractual items, purchases of supplies and equipment for the entire region or arranging for such purchases through the procurement official; administrative record work in connection with all compensation cases; issuance of instructions to field personnel; and reports (weekly personnel, semi-monthly personnel and financial, monthly progress report of field activities, monthly news item, and fiscal and calendar year reports).

Personnel

At the beginning of the WPA program considerable difficulty was experienced in getting a clerical force for the Regional Office, due to the fact that the employees were taken from relief rolls and the desired number could not readily be obtained by the local employment office. During the first half of August, it was possible to secure only three workers. This number was increased to 10 during the latter half of August and to 12 during the latter half of September. The force was continued on this basis from that time until April 30, 1936, and consisted of 4 clerks, 3 stenographers, 5 typists and 2 office boys. During the period May 1, 1936 to October 3, 1936, the office force was increased to 22 workers, consisting of 8 clerks, 10 typists, 2 stenographers and 2 office boys. This increase in force was made in order to expedite payment of salaries and expenses and because the field force had been increased to about 4,500 workers. The office force during the field season of 1936 was divided into two shifts, one from 8 a.m. to 3 p.m. and the other from 5 p.m. to 10.15 p.m. This arrangement was necessary due to the limited space available and to prevent the purchase of considerable extra equipment which would have been essential if only one shift had been employed. The double-shift arrangement was used only for about a week after the ending of each payroll period. During the remainder of the time the services of the workers were staggered and they functioned on a one-shift per day basis. Mr. Chapman took charge of the night shift, while Mr. Stinson directed the work during the day. The senior pathologist and his secretary worked the usual hours from 9 a.m. to 4.30 p.m. Frequently, however, the senior pathologist found it necessary to work a part or all of both shifts. In fact, in order to accomplish the desired results, it was often necessary for all the four regular employees to work overtime during the rush season.

The WPA personnel at the Cambridge Office was taken entirely from relief rolls and was for the most part inexperienced in the type of work demanded. We were fortunate in securing good clerks and fair typists, but had extreme difficulty in obtaining effective stenographers.

A total of 32 security-wage workers were employed at the Cambridge Office during the period August 1, 1935 to December 31, 1936. Five of these persons resigned to accept private employment, one resigned to be married, five were discharged because of inefficiency, eleven discharged because of curtailment in field work, and ten are still employed. A total of 10 of the 32 workers were promoted to a higher rating during their service at the Cambridge Office. No politics was evident in the selection of personnel, and promotions were based entirely on the efficiency record of those concerned.

Up to December 31, 1936, a total of 2,952 WPA payrolls had been prepared at the Cambridge Office and transmitted to the Treasury Accounts Office for payment. Payrolls were prepared on a semi-monthly basis and usually two payrolls, one for relief and another for non-relief employees, covered the services of all WPA laborers employed under the direction of a district leader.

The time sheets for the WPA laborers were submitted by the district leaders semi-monthly direct to the Cambridge Office. The payrolls were prepared there from these time sheets, usually the first day they were received, and sent by messenger to the Treasury Accounts Office at Boston. During 1935 the checks were mailed to the Cambridge Office where they were grouped by districts and sent by registered special delivery mail to the district leaders for distribution to the field workers. This procedure was continued until June 30, 1936, except that beginning May 1 our messenger called for the checks at the Accounting Office in order to expedite delivery. During the first part of July a new arrangement was initiated in the distribution of checks whereby each check was mailed by the Cambridge Office direct to the individual concerned, the envelopes being addressed in advance of receipt of the checks. This plan speeded up the delivery of checks by at least a day. A few checks were reported as lost, but the number was insignificant. The interval between the dates the payrolls were submitted to the Treasury Accounts Office and the dates the checks were received at our Cambridge Office averaged 4.5 days for 2,952 payrolls. See following table.

Table 49 - Tabulation Showing Time Involved from Date Voucher Transmitted To Treasury Accounts Office to Date Checks Were Received at This Office - Period July 29, 1935 to December 31, 1936

<u>Days Involved</u>	<u>Number of Vouchers</u>	<u>Percent</u>
1	39	1.3
2	250	8.5
3	634	21.5
4	743	25.2
5	531	18.0
6	384	13.0
7	225	7.6
8	101	3.4
9	25	.8
10	6	.3
11	3	.1
12	4	.1
13	2	.1
14	1	.0
15	-	-
16	-	-
17	-	-
18	-	-
19	-	-
20	2	.1
	2,952	100.0

During the first few months of the program, the Accounting Office required incorporating in the payrolls such detailed data which did not appear to be necessary. One of the requirements was that we designate, according to 24 classes, the reason why an employee did not work full time. I objected strenuously to such a procedure and finally the requirement was waived.

Payroll Encumbrances

During the period July 29, 1935 to January 31, 1936, the Treasury Department required the establishment of an advance encumbrance for each payroll. This method entailed a large amount of clerical work. Fortunately, the system was changed February 1, 1936 to allow our office to set up an advance encumbrance covering the total estimated amount to be obligated by each official project for each payroll period. This procedure greatly simplified this phase of the work.

Considerable difficulty was encountered in securing prompt cancellation of unobligated encumbrances. In order to make available for re-encumbrance any unobligated balances, it is necessary for this office to issue Form A-5A, notice of cancellation of encumbrance. In many instances, it required three or four months before final approval and release of these unobligated balances could be obtained from the Treasury Accounts Office. This condition complicated our record-keeping and made it difficult to determine the exact status of funds. During recent months, this situation has been remedied and prompt action taken on our requests for cancellation of unobligated encumbrances.

Procurement Procedure

During the first few weeks of the WPA program, it was necessary to obtain all equipment and supplies on requisition through the Procurement Division of the Treasury Department. The length of time involved in this procedure was so great, it decidedly handicapped field activities. On August 29, 1935, authority was granted to issue requisitions and purchase supplies under competition without reference to the Procurement Division where the cost involved did not exceed \$500. This procedure greatly facilitated delivery allowing the program to go forward with more speed and efficiency.

In making purchases of small supplies and equipment in the field we were handicapped until the latter part of February, 1936, because such items had to be obtained either through the Procurement Officer or secured through the Cambridge Office under the \$300 exemption. The Accounting Office refused to permit the inclusion of such items in the monthly expense account on Form 1012, as had been the practice under the regular program. However, they finally agreed under emergency conditions to permit the field men to make such small purchases and to claim reimbursement in their monthly expense accounts.

At the start of the WPA program, the Procurement Officer required that we obtain contracts for all automobile storage, maintenance and repairs to the Government machines and telephone service. The accounts payable under these contracts were certified at the Cambridge Office and transmitted to the Procurement Division of the Treasury Department. During the period November 4, 1935 to June 5, 1936, a total of 113 vouchers were submitted to the Procurement Officer. There was on the average a delay of 123 days between the dates

The Cambridge Office has been able to pay vouchers more promptly. The delay in payment was significantly reduced by letter not in formal interviews with the Procurement Officer. In each instance, promises were received that the office would be given prompt attention and a few vouchers would be paid.

During a conference with the Procurement Officer in June 1936, he admitted it was unfortunate that he had required such contracts and the submittal of the vouchers through his office. He agreed to terminate all contracts June 30 and arrangements were made whereby all vouchers covering such items could be sent direct to the Accounting Office of the Treasury Department. This arrangement has greatly facilitated prompt payment of vouchers, as evidenced by the fact that the next 162 vouchers of this type, that were submitted up to October 21, 1936, were paid in an average of 11½ days as against 123 under the old procedure. New contracts were made by the Cambridge Office to cover automobile storage and telephone service during the fiscal year 1937. No contracts were provided for automobile repairs and maintenance.

Expense Accounts (Form 1012)

During the first few weeks of the WPA program, the auditing of expense accounts at the Cambridge Office was handicapped by lack of personnel and the inexperience of the workers. Special effort was made to submit the payrolls promptly; and in consequence, action on the expense accounts was delayed. This situation was, however, gradually remedied with the result that for the past 15 months such accounts have moved rapidly through the Cambridge Office and have been promptly audited and paid by the Accounting Office. We were also handicapped for several weeks during the beginning of the program in getting vouchers through the Accounting Office because of their insistence on certain procedures entirely different from any that had been used in the past. Some of the differences in regulations governing the auditing of accounts under the WPA program, as compared with the regular procedure, were as follows:

1. Duplicate receipts required.
2. Required to attach sub-letter of authority or letter of authorization to each 1012 voucher. If the employee was away from his headquarters at the beginning of the travel period, it is also necessary to attach a copy of the previous month's sub-letter of authority.
3. Certification required on telephone bills in addition to certification on 1034 forms.
4. Certificate of identification required for minor difference in name of payee.
5. Speedometer readings required for travel statements during the first few months of the program, even though at that time not compulsory on regular work.
6. Necessary to indicate on face of voucher the exact dates of the travel period, rather than to show the account as covering all items from the 1st to 31st of the month.
7. Forms 1056 required for each day that service is indicated on 1034 voucher; also confirming purchase orders, rather than a single 1056 and one purchase order to cover all items of service.

The copies of purchase orders prepared, but were not sent to the Cambridge Office due to lack of information as to their distribution. Instructions state that 7 copies of purchase orders should be prepared but the Accounting Office has been unable to give any information as to the disposition of the additional copies.

A total of 5,187 expense accounts and 1034 vouchers had been audited at the Cambridge Office up to December 31, 1936, and 3,157 of these accounts have been paid.

WPA Forms

It appears that the WPA stock room at Boston is not supposed to supply forms to projects operated by federal activities. Since we were unable to secure any of the required forms from Washington, our needs have been met under protest by this local stock room. We used the payrolls forms supplied by the WPA, but prepared our own time sheets.

During the first few weeks of the program, the various WPA requisition and assignment forms were not available. This condition caused considerable confusion; but in spite of it, satisfactory arrangements were promptly made for putting relief labor to work on our project. The success in this respect was due chiefly to the initiative and strenuous efforts of the district leaders.

Accomplishments in Blister Rust Control Under The WPA Program Northeastern States - July 29, 1935 to Dec. 31, 1936

Ribes Eradication

Ribes eradication was the major activity performed on the blister rust control project under the WPA program in 75 counties of the Northeastern States. In fact, nearly 67 percent of the total man days was used on such work, which was conducted during July-October, 1935, and May-September, 1936, in each of the Northeastern States, except Pennsylvania and New York where a small amount of Ribes eradication was also performed during October 1936. A total of 1,598,159 acres, practically all on individually-owned lands, were cleared of 52,594,544 wild Ribes and 68,364 cultivated bushes as a result of 404,426 eight-hour men days of work.

During 1935 the WPA Ribes eradication crew consisted of seven unskilled laborers and a skilled worker (foreman). On the regular program the standard crew was composed of five laborers and a foreman, while on the FWA program the 13-man crew comprised 10 laborers, 2 strawbosses and a foreman. These larger size crews were used to reduce overhead costs and to provide qualified men for foremen. The FWA crew usually functioned in two units each directed by a strawboss, the foreman apportioning his time between the units. This arrangement did not prove very satisfactory; therefore, under the WPA program, the crew was reduced to eight men working as a single unit. In sections where the Ribes were abundant, this arrangement was practicable; but in areas where the crew was widely spread in scout formation, seven men in line proved to be unwieldy. Consequently during 1936, many of the WPA crews operated as six-man units, especially in Maine and southern New England.

It was also important to have a Foreman with such Ribes eradication experience at all times, since only about 10 percent of the men employed during 1935 had previous experience in blister rust control, and also the relief labor comprising at least 90 percent of the total personnel was not usually as reliable and capable as the selected men used on the regular program. This condition as regards the WPA labor made it advisable, when possible, to select control areas necessitating crew work in strip formation, rather than sections where the Ribes could be located and eradicated by scouting methods. In fact, no individual WPA scouts were employed on the program. Such an arrangement resulted in the destruction of numerous Ribes concentrations, but was an important factor in restricting the amount of acreage worked. Numerous checks made on the project indicated the quality of the work was in most instances satisfactory, but the quantity was in general considerably below that obtained with a corresponding number of men on the regular program. (See graph on page 138.)

Table 50 - Distribution of Work and Personnel Employed on WPA Ribes Eradication Projects in Northeastern States During 1935 and 1936

(August 1 to October 31, 1935 -- May 1 to September 30, 1936)

State	No. Counties in which Work Performed	No. Towns Where Work Performed		Personnel Employed					
				No. Security Wage Workers		No. Supervisors			
				Maximum No.	Ave. No.				
		1935	1936	1935	1936	1935	1936	1935	1936
Maine	14	45	73	582	722	556	652	10	15
N. H.	10	57	96	535	878	407	762	10	18
Vt.	8	14	23	277	624	218	547	7	11
Mass.	6	18	40	249	322	231	280	4	5
N. I.	1	1	3	49	64	46	55	-	-
Conn.	5	10	15	118	92	109	87	2	2
N. Y.	26	58	147	871	1,160	756	1,101	18	18
N. J.	3	4	3	13	10	11	6	1	1
Pa.	4	21	41	474	620	438	550	8	15
All States	75	228	441	3,163	4,492	2,752	4,040	55	85

Table 51 - Summary of Ribes Eradication Work Performed Under W.P.A. Program in Northeastern States During 1935 and 1936. (Excludes Nursery Sanitation and Cultivated Black Currant Elimination)

Initial Control Work

State	Acreage			Ribes Pulled		Total Man Days	Cost			Per Acre		
	Total Worked	Pine Protected		Wild	Cult.		Local Coop.	State	W.P.A.	Total	Cost	Ribes Days
Maine	1935	75,173	30,032	2,699,427	1,633	16,891	136.87	85.41	57,615.96	57,838.24	.790	36.9
	1936	109,504	39,107	7,264,562	2,761	26,201	-	-	96,836.95	96,836.95	.884	66.3
	Total	182,677	69,139	9,963,989	4,394	43,092	136.87	85.41	154,452.91	154,675.19	.847	54.5
N.H.	1935	44,308	22,700	1,137,133	372	9,447	170.10	-	34,260.94	34,431.04	.777	25.7
	1936	123,442	62,200	5,564,894	4,360	27,583	53.00	134.15	91,597.57	91,734.72	.744	45.1
	Total	167,750	84,900	6,702,027	4,732	37,030	223.10	134.15	125,858.51	126,215.76	.752	40.0
Vt.	1935	14,788	4,644	241,726	57	4,561	543.00	149.58	12,614.93	13,307.51	.900	16.5
	1936	78,095	19,175	2,579,723	1,852	28,838	7310.75	-	86,345.52	93,656.27	1.20	33.0
	Total	92,883	23,819	2,821,454	1,909	33,399	7853.75	149.58	98,960.45	106,963.78	1.15	30.4
Mass.	1935	25,559	10,132	270,365	13,091	4,279	1137.40	-	14,532.19	15,719.59	.615	10.6
	1936	50,795	22,690	593,650	850	7,005	1095.97	432.28	29,034.66	30,562.91	.602	11.7
	Total	76,354	32,822	863,995	13,941	11,284	2283.37	432.28	43,566.85	46,282.50	.606	11.5
R.I.	1935	-	-	-	-	-	-	-	-	-	-	-
	1936	4,199	1,400	4,037	443	726	-	-	2,933.48	2,933.48	.699	1.0
	Total	4,199	1,400	4,037	443	726	-	-	2,933.48	2,933.48	.699	1.0
Conn.	1935	-	-	-	-	-	-	-	-	-	-	-
	1936	16,227	1,855	87,906	2,138	2,287	-	22.94	8,944.53	8,967.47	.553	5.4
	Total	16,227	1,855	87,906	2,138	2,287	-	22.94	8,944.53	8,967.47	.553	5.4
N.Y.	1935	81,945	54,630	2,265,873	1,697	27,296	-	11,034.80	102,046.55	113,081.35	1.38	27.7
	1936	269,949	179,966	9,089,212	12,978	72,521	-	22,359.92	278,283.07	300,642.99	1.11	33.7
	Total	351,894	234,596	11,355,085	14,675	99,817	-	33,394.72	380,329.62	413,724.34	1.18	32.5
N.J.	1935	1,060	457	14,332	100	456	-	-	1,869.33	1,869.33	1.76	13.5
	1936	2,565	470	6,795	199	495	-	298.10	1,992.97	2,291.07	.893	2.6
	Total	3,625	927	21,127	299	951	-	298.10	3,862.30	4,160.40	1.15	5.8
Penn.	1935	22,925	5,302	2,831,765	2,442	14,648	-	-	43,159.03	43,159.03	1.28	123.5
	1936	72,709	14,006	4,710,395	5,262	30,383	-	-	119,230.77	119,230.77	1.64	64.8
	Total	95,634	19,308	7,542,160	7,704	45,031	-	-	162,389.80	162,389.80	1.70	78.9
All States	1935	263,758	127,897	9,460,626	19,392	77,578	2,037.37	11,269.79	266,098.93	279,406.09	1.06	35.9
	1936	727,485	340,869	29,901,209	30,843	196,039	8,459.72	23,247.39	715,199.52	746,906.63	1.05	41.1
	Total	991,243	468,766	39,361,835	50,235	273,617	10,497.09	34,517.18	981,298.45	1,026,312.72	1.04	39.7

Note: The cost figures are based on the total cost of laborers and foremen employed in locating and pulling Ribes; transportation of crews and miscellaneous expenses for trail paper, picks, etc. Cost of W.P.A. supervisors is not included in above expenditures for Ribes eradication.

Table 84 - Summary of Ribes Eradication Work Performed Under W.P.A. System in Forests and Parks During 1935 and 1936. - (Continued)

Ribes Eradication Work

State	Year	Acreage		Ribes Pulled		Total Man Days	Cost				Per Acre	
		Total Worked	Pine Protected	Wild	Cult.		Local Coop.	State	W.P.A.	Total	Cost	Ribes Days
Maine	1935	28,584	14,968	582,502	327	6,790	192.20	43.07	23,169.13	23,404.45	.819	20.4
	1936	125,776	53,540	3,269,096	6,798	21,705	265.32	-	81,811.14	82,076.46	.653	26.0
	Total	154,360	68,508	3,851,598	7,125	28,495	457.52	43.07	104,980.32	105,480.91	.633	25.0
N.H.	1935	34,137	17,250	848,325	149	7,553	133.65	-	26,179.53	26,313.18	.771	24.9
	1936	135,654	63,400	2,945,481	1,126	25,195	978.00	123.83	83,676.27	84,778.10	.625	21.7
	Total	169,791	80,650	3,793,806	1,275	32,751	1,111.65	123.83	109,855.80	111,091.28	.654	22.3
Vt.	1935	17,556	6,704	138,689	25	3,951	450.00	131.26	13,050.47	13,651.73	.776	7.9
	1936	25,701	7,040	678,745	469	8,289	1,408.00	-	24,916.51	26,324.51	1.02	26.4
	Total	43,257	13,744	817,434	494	12,240	1,858.00	131.26	37,966.98	39,956.24	.924	18.9
Mass.	1935	29,298	14,762	395,197	1,275	5,951	1,417.70	-	23,236.25	24,653.95	.841	13.6
	1936	62,373	30,923	1,046,961	2,633	12,955	3,108.83	1512.94	52,254.81	56,876.53	.912	16.3
	Total	91,671	45,685	1,442,158	3,908	18,906	4,526.53	1512.94	75,491.06	81,530.53	.889	15.7
R.I.	1935	8,695	2,893	10,962	898	2,036	-	209.25	7,394.63	7,603.88	.875	1.3
	1936	23,947	7,982	26,214	1,212	3,430	-	85.48	13,098.46	13,183.94	.551	1.1
	Total	32,642	10,880	37,176	2,110	5,466	-	294.73	20,493.09	20,787.82	.637	1.1
Conn.	1935	20,670	2,354	212,196	639	4,773	-	-	17,665.91	17,665.91	.855	10.3
	1936	10,344	1,382	198,383	267	4,202	176.00	42.59	16,920.93	17,139.52	1.66	19.2
	Total	31,014	3,736	410,579	906	8,975	176.00	42.59	34,586.84	34,805.43	1.12	13.2
N.Y.	1935	17,945	11,964	357,229	279	4,461	-	2501.53	16,612.23	19,113.56	1.07	19.9
	1936	52,271	34,848	1,510,794	2,124	12,568	-	2238.45	49,412.44	51,650.89	.988	28.9
	Total	70,216	46,812	1,868,023	2,403	17,029	-	4739.78	66,024.67	70,764.45	1.01	26.6
Penn.	1935	-	-	-	-	-	-	-	-	-	-	-
	1936	13,945	3,846	1,011,935	508	6,947	-	-	25,656.34	25,656.34	1.84	72.6
	Total	13,945	3,846	1,011,935	508	6,947	-	-	25,656.34	25,656.34	1.84	72.6
Totals	1935	156,885	70,900	2,545,100	3,592	35,518	2,193.55	2384.91	127,308.20	132,386.66	.844	16.2
	1936	450,011	207,961	10,687,609	15,137	95,291	5,936.15	4003.29	347,746.90	357,686.34	.795	23.7
	Grand Total	606,896	278,861	13,232,709	18,729	130,809	8,129.70	6888.20	475,055.10	490,073.00	.808	21.8

Note: The cost figures are based on the total cost of laborers and foremen employed in locating and pulling Ribes; transportation of crews and miscellaneous expenses for trail paper, picks, etc. Cost of W.P.A. supervisors is not included in above expenditures for Ribes eradication.

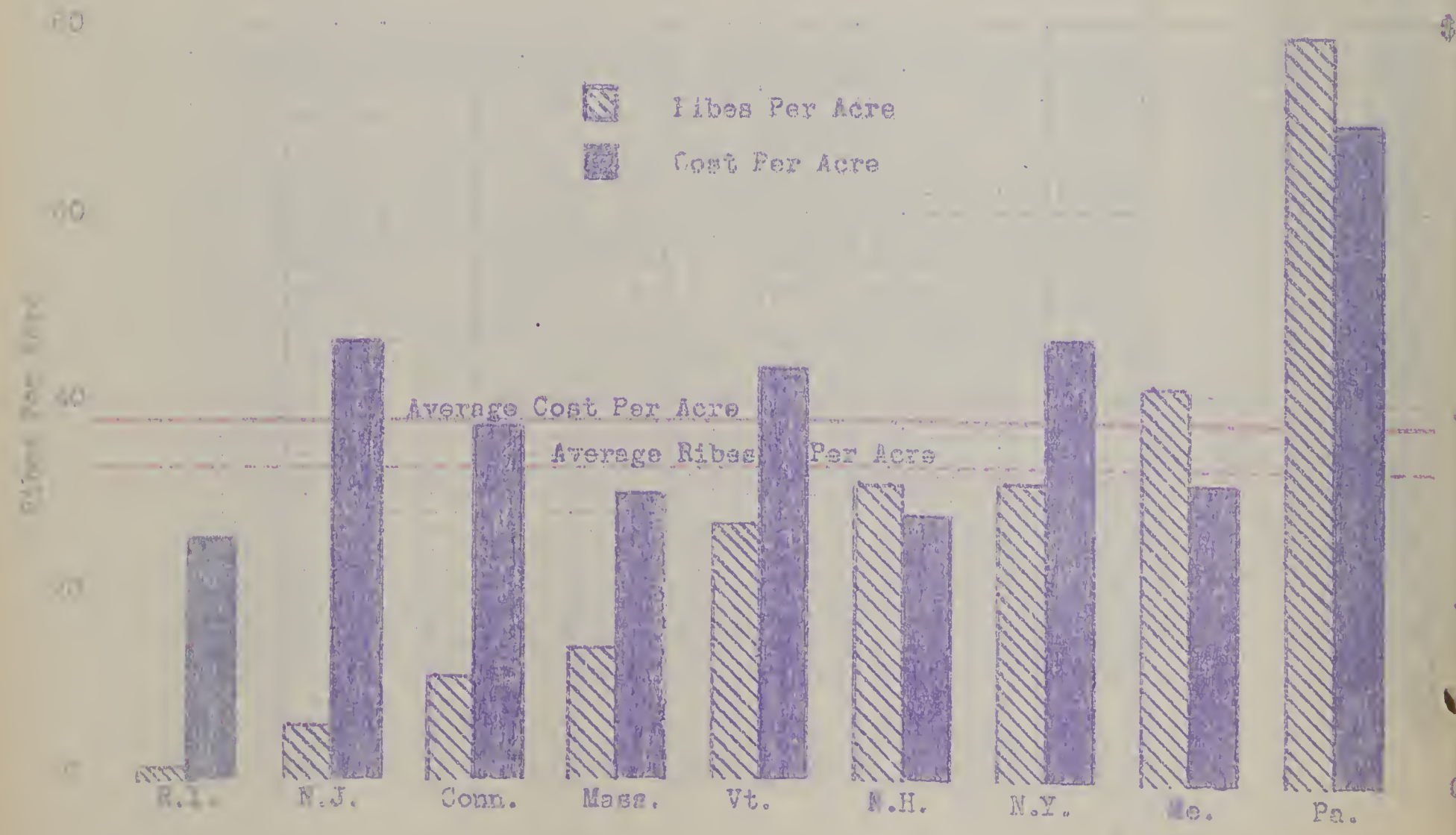
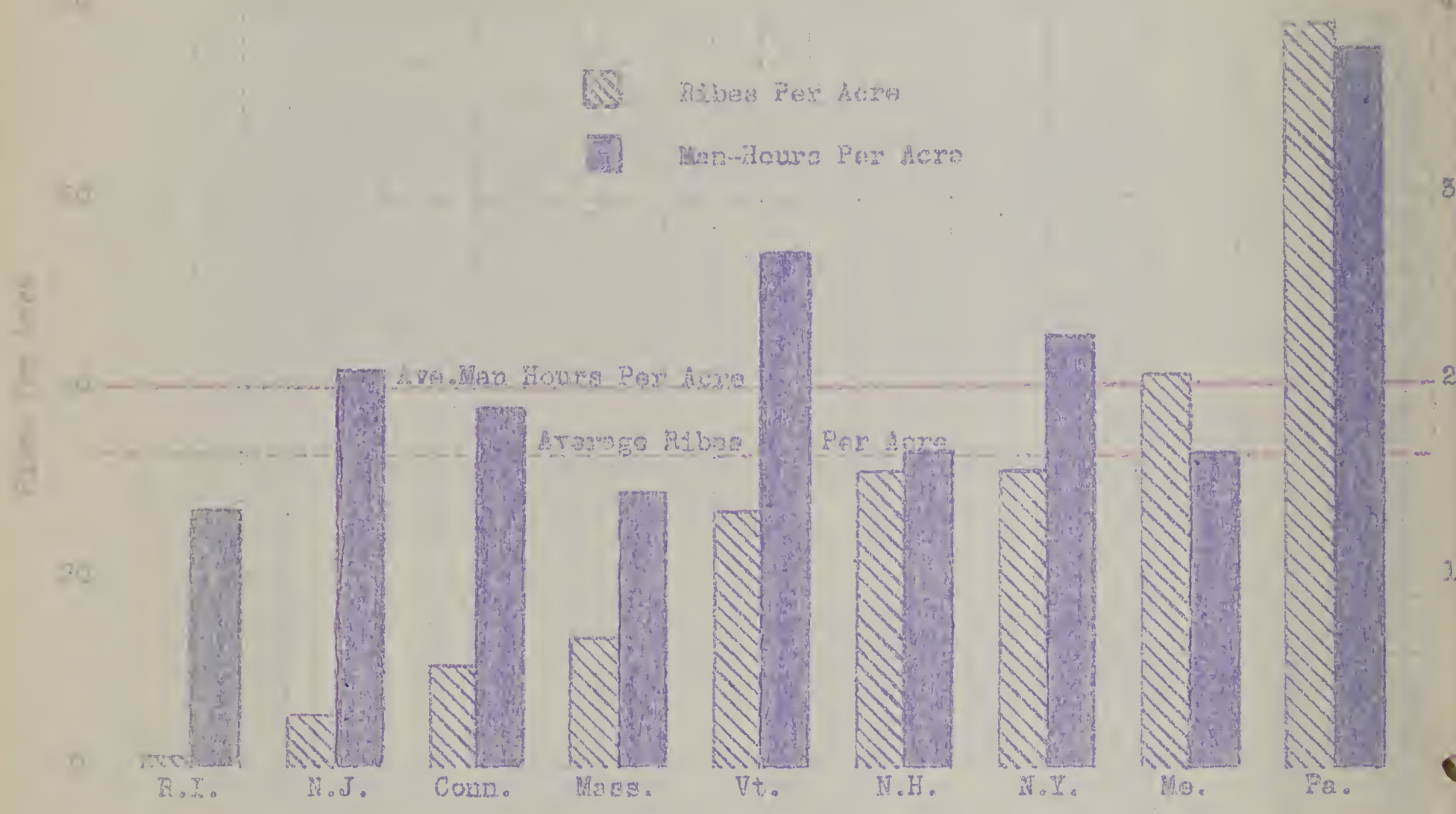
Table 53 Summary of Ribes Eradication Work Performed Under W.P.A. Program in Northeastern States During 1935 and 1936. - (Excludes Nursery Sanitation and Cultivated Black Currant Elimination.)

Initial and Re-Eradication

State	Year	Acreage		Ribes Felled		Total Man Days	Cost		Per Ribes
		Total Worked	Pine Protected	Wild.	Cult.		Local Coop.	State	
Maine	1935	101,757	45,000	3,281,929	1960	23,681	329.07	128.48	80,785.14 81,242.69
	1936	235,280	92,647	10,533,658	9559	47,906	265.32	-	178,648.09 178,913.41
	Total	337,037	137,647	13,815,587	11,519	71,587	594.39	128.48	259,433.23 260,156.10
N. H.	1935	78,445	39,950	1,985,458	521	17,003	303.75	-	60,440.47 60,744.22
	1936	259,096	130,600	8,510,575	5426	52,778	1031.00	257.98	175,273.84 176,562.62
	Total	337,541	170,550	10,495,833	6007	69,781	1334.75	257.98	235,714.31 237,307.04
Vt.	1935	32,344	11,348	580,415	82	3,512	993.00	280.84	25,665.40 26,939.24
	1936	103,798	26,215	3,258,473	2321	37,127	8718.75	-	111,262.03 119,980.78
	Total	136,140	37,563	3,838,888	2403	40,639	9711.75	280.84	136,927.43 146,920.02
Mass.	1935	54,857	24,894	665,562	14,366	10,230	2605.10	-	37,768.44 40,373.54
	1936	113,168	53,613	1,640,591	3483	19,960	4204.80	1945.22	81,289.47 87,439.49
	Total	168,025	78,507	2,306,153	17,849	30,190	6809.90	1945.22	119,057.91 127,813.03
R. I.	1935	8,695	2,893	10,962	898	2,036	-	209.25	7,394.63 7,603.88
	1936	28,146	9,382	30,301	1,655	4,156	-	85.48	16,031.94 16,117.42
	Total	36,841	12,280	41,263	2,553	6,192	-	294.73	23,426.57 23,721.30
Conn.	1935	20,670	2,354	212,196	639	4,773	-	-	17,665.91 17,665.91
	1936	20,571	3,237	286,289	2,405	6,489	176.00	65.53	25,865.46 26,106.99
	Total	47,241	5,591	498,485	3,044	11,262	176.00	65.53	43,531.37 43,772.90
N. Y.	1935	99,890	66,594	2,625,107	1,976	31,757	-	13,536.13	118,653.78 132,194.91
	1936	322,220	214,814	10,600,006	15,102	85,089	-	24,598.37	327,695.51 352,293.88
	Total	422,110	281,408	13,223,113	17,078	116,846	-	38,134.50	446,354.29 484,488.79
N. J.	1935	1,060	457	14,332	100	456	-	-	1,869.33 1,869.33
	1936	2,565	470	6,795	199	495	-	298.10	1,992.97 2,291.07
	Total	3,625	927	21,127	299	951	-	298.10	3,862.30 4,160.40
Penn.	1935	22,925	5,302	2,831,765	2,442	14,048	-	-	43,153.03 43,159.03
	1936	86,654	17,852	5,722,330	5,770	37,330	-	-	144,887.11 144,887.11
	Total	109,579	23,154	8,554,095	8,212	51,378	-	-	188,040.14 188,046.14
Totals	1935	420,645	193,797	12,005,726	22,984	113,096	4230.92	14,154.70	395,407.15 411,792.75
	1936	1,177,496	548,830	40,528,818	45,980	291,350	14,395.87	27,250.68	1,062,946.42 1,104,592.97
	Total	1,598,139	747,627	52,534,544	68,964	404,446	18,626.79	41,405.38	1,458,353.55 1,516,385.72

Total - The cost figures are based on the total cost of laborers and foremen employed in locating and pulling Ribes trees and in collecting material for disposal. The cost of Ribes trees pulled by other means is not included in the total.

CHART 1. COST OF PRODUCTION OF RIBES IN THE NORTHEASTERN STATES
 WPA PROGRAM - NORTHEASTERN STATES - 1940-1941



in Northeastern States During 1935 and 1936.

State	Year	No. WPA Supervisors	Man Days Worked by WPA Supervisors	Cost of Supervisors			
				State	B. E. P. & Q.	W. P. A.	Total
Maine	1935	10	788	362.00	-	5,088.60	5,450.60
	1936	15	2,477	128.00	-	14,825.78	14,953.78
N. H.	1935	10	627	-	-	4,104.95	4,104.95
	1936	18	2,227	1,583.50	-	14,596.10	16,179.60
Vt.	1935	7	535	120.06	-	3,424.52	3,544.58
	1936	11	1,680	-	-	8,946.50	8,946.50
Mass.	1935	4	318	-	-	2,034.50	2,034.50
	1936	5	806	-	-	4,198.62	4,198.62
R. I.	1935	-	-	-	-	-	-
	1936	-	-	-	-	-	-
Conn.	1935	2	116	-	-	894.60	894.60
	1936	2	313	129.95	270.00	1,488.55	1,888.50
N. Y.	1935	13	1,015	462.24	-	6,337.35	6,799.59
	1936	18	2,831	3,986.52	-	15,421.98	19,408.50
N. J.	1935	1	84	37.21	-	435.25	472.46
	1936	1	105	-	-	556.00	556.00
Penn.	1935	8	577	-	-	2,967.20	2,967.20
	1936	15	2,238	-	-	12,986.03	12,986.03
Total	1935	55	4,060	981.51	-	25,286.97	26,268.48
	1936	85	12,677	5,827.97	270.00	73,019.56	79,117.53

During the period from November 1, 1935 to April 30, 1936 and from October 1 to December 31, 1936, the major project under the WPA program in all the Northeastern States was pine and control area mapping. Such pre-eradication surveys are an essential part of blister rust control and an important factor in reducing the cost of Ribes eradication. Such mapping not only locates the pine areas, but definitely defines the limits of the necessary protection zones, thus reducing costs by avoiding excessive protection zone areas. With such maps the crew foremen can readily locate control area boundaries in the field and consequently limit their activities chiefly to crew supervision. The maps will also be of considerable assistance in determining the need for reworkings. This survey resulted in the mapping of 2,740,627 acres for control work and the examination and elimination from protection of an additional 2,563,356 acres. In Pennsylvania, several hundred thousand additional acres were eliminated, but no definite record was kept. The detailed accomplishments in each state are given in Table 55.

Table 55 - Summary of Pine and Control Area Mapping under Federal WPA Program in Northeastern States during 1935 and 1936

Federal Program										
Year	No. Towns	Acreage Mapped	Acreage Examined but not Mapped	Miles Boundary Lines Painted	Total Man Days	Cost				
						Towns	State	BE&PQ	WPA	Totals
1935	22	94,070	178,972	329	2,290	-	\$ 688.45	-	\$ 9,414.39	10,102.84
1936	103	522,343	1,081,040	1,212	6,876	-	1,513.39	-	29,153.26	30,666.65
Total	-	616,413	1,260,012	1,641	9,166	-	2,201.84	-	38,567.65	40,769.49
1935	31	53,059	-	-	1,725	-	-	-	8,470.74	8,470.74
1936	80	302,873	48,486	-	5,659	-	18.32	-	28,151.92	28,170.24
Total	-	355,932	48,486	-	7,384	-	18.32	-	36,622.66	36,640.98
1935	15	85,530	71,281	-	1,212	-	-	-	5,336.77	5,336.77
1936	60	430,059	525,710	415	4,634	-	-	-	18,963.17	18,963.17
Total	-	515,589	596,991	415	5,846	-	-	-	24,359.94	24,359.94
1935	6	23,875	13,457	61	971	144.60	-	-	3,914.75	4,059.35
1936	29	162,623	175,671	249	3,069	801.00	588.17	-	13,920.79	15,309.96
Total	-	186,498	189,128	310	4,040	945.60	588.17	-	17,835.54	19,369.30
1935	1	2,043	-	-	129	-	254.05	-	380.75	634.80
1936	3	42,818	-	-	499	-	566.20	-	1,756.15	2,322.95
Total	-	44,861	-	-	628	-	820.25	-	2,136.88	2,957.75
1935	4	900	72,778	-	58	-	94.14	-	339.42	433.56
1936	12	15,443	30,851	119	775	-	525.56	405.00	4,155.40	5,085.96
Total	-	16,343	103,629	119	833	-	619.70	405.00	4,474.82	5,499.52
1935	37	325,335	69,081	904	3,050	-	-	-	12,745.62	12,745.62
1936	93	502,800	296,029	1,475	6,117	-	716.32	-	35,397.46	36,113.78
Total	-	828,135	365,110	2,379	9,167	-	716.32	-	48,143.08	48,859.86
1935	40	31,214	*	297	1,502	-	-	-	6,276.84	6,276.84
1936	114	145,642	*	1,343	5,072	-	-	-	22,291.65	22,291.65
Total	-	176,856	*	1,640	6,574	-	-	-	28,568.49	28,568.49
1935	156	816,026	405,569	1,591	10,957	144.60	1,036.64	-	46,939.28	48,120.48
1936	499	2,124,601	2,157,737	4,918	32,701	801.00	3,927.96	405.00	153,769.78	158,903.74
Total	-	2,740,627	2,563,356*	6,509	43,658	\$945.60	\$4,964.60	\$405.00	\$200,709.06	\$207,024.26

*In Pennsylvania, several hundred thousand acres were eliminated, but no definite record was kept.

Summary of Sanitation Work

Under the WPA program in the States, sanitation work was done in vine-growing nurseries were cleared of Ribes during the spring of 1935. This work assured the continued production of disease-free vines for use on reforestation projects. A total of 6,348 acres were eradicated of 5,159 wild Ribes and 111 cultivated bushes, as a result of 839 man days of labor.

Table 56. Summary of Nursery Sanitation Work under the WPA Program
In the Northeastern States

Type of Erad.	No. of Nurseries Worked	Acreege Examined	Ribes Pulled Wild	Cult.	Total Men Days	Indiv.	State	W.P.A.	Total	Cost per Acre
A. Recrad.	1	176	108	-	119	-	-	\$ 399.00	\$ 399.00	2.27
"	1	380	257	75	75	-	24.00	218.27	242.27	.64
"	2	487	1,574	-	247	-	438.48	322.90	1,261.38	2.59
"	2	932	53	8	70	-	-	159.35	159.35	.17
"	3	3,990	1,285	-	260	-	50.96	1,095.25	1,146.21	.29
"	2	385	1,882	28	68	35.00	-	258.02	301.02	.78
All Recrad.	11	6,348	5,159	111	339	365.00	\$513.44	\$2,930.79	\$3,507.23	.56

Elimination of Ribes Nigrum (European Black Currant)

Elimination of Ribes nigrum, the most dangerous host plant of the European rust disease, was conducted chiefly during the fall of 1935 as a special project under the WPA program in Massachusetts. This work completed the elimination of such bushes from the entire mainland of the state. The detailed accomplishments are as follows:

No. townships in which work done.....	12
No. properties inspected.....	49,466
No. patches located.....	468
No. Ribes located - {Nigrum.....	2,392
{Other.....	87
No. Ribes pulled - {Nigrum.....	1,914
{Other.....	0
Total man days.....	294
{Individuals.....	\$ 242.90
Cost - {WPA.....	1,712.75
{Total.....	\$1,955.65

Dieter Rust Canker Elimination work was conducted in New Hampshire, Vermont, Massachusetts, Connecticut, New York and Pennsylvania during the fall of 1935 and 1936. The results of this project are shown in Table 57.

Table 57.-Dieter Rust Canker Elimination work under WPA Program in Northeastern States - 1935 and 1936

State	Year	Est. No. Pines Examined	No. Fatally Infected Pines Cut Down	No. Pines Treated for Infection	No. Cankers Removed Branch	Stem	Man Days	Total Cost (All WPA)
N. H.	1935	16,900	558	1,124	1,176	23	186	\$ 578.85
	1936	14,600	686	1,347	1,364	19	297	959.95
	Total	31,500	1,244	2,471	2,540	42	483	1,538.80
Vt.	1935	197,323	30,087	24,685	30,912	-	2,264	9,005.94
	1936	151,885	39,983	25,600	31,054	-	2,179	8,544.20
	Total	349,208	70,070	50,285	61,966	-	4,443	17,550.14
Mass.	1935	214,223	30,645	25,809	32,038	23	2,450	9,584.79
	1936	166,485	40,669	26,947	32,418	19	2,476	9,504.15
	Total	380,708	71,314	52,756	64,506	42	4,926	\$19,088.94

Special Field Studies

Check on cultivated Ribes: In New Hampshire, the control areas in 23 towns were reexamined for cultivated Ribes during the fall of 1935 to determine existing conditions. A total of 9,986 properties were inspected and 627 patches of Ribes were located. These patches contained 106 Ribes nigrum and 5,627 other cultivated bushes. The project consumed 329 man days and cost \$1,152.01.

Pine infection studies: In four states (New Hampshire, Vermont, Massachusetts and Connecticut) WPA laborers were employed for 571 man days in making pine infection studies under the direction of 8 district leaders. The white pines were examined for infection on 33.9 miles of rod-wide strip lines and in 22 plots comprising 77 acres. Also, in Connecticut, 191 man days were used in making a strip line survey to determine the board foot contents of the white pines in the township of Norfolk. The data for these studies have not as yet been submitted to the Cambridge Office, consequently a summary has not been prepared.

State and Local Cooperation on WPA Program in Northeastern States

State and local cooperation on the federal WPA program was manifested at all times. This support is evidenced by these cooperating agencies expending \$74,388.01 on field activities during 1935 and 1936. This amount represents contributions by eight states, 2 counties, 53 townships and 176 individuals.

The state expenditures of \$64,509.72 were chiefly for field supervision and checking, crew foremen, transportation, and a small amount for labor and equipment. The counties and towns spent \$18,689.59, mainly for transportation of WPA crews, while the individual expenditures of \$1,188.70 represented the cost of labor. The amounts spent by the states and their local cooperators are shown in Table 16.

In several instances local relief agencies have supplied their workers with rubber boots to protect them when working in swampy locations. This arrangement has materially increased the efficiency of work in local areas, since it has eliminated the otherwise constant complaint of wet feet. It has also protected the workers from illness, particularly in the case of employees who have never been accustomed to work under such conditions.

In addition to the above mentioned cooperation, the states contributed office space and equipment for their respective state leaders, and paid the expenses of these men, except in Connecticut and Vermont. The State of New Hampshire also paid most of the expenses of four of the district leaders.

In Maine and New Hampshire, the WPA activities had a beneficial effect in stimulating town cooperation on the regular control program. During 1936, 84 towns appropriated \$17,150.00 for such work, compared with \$16,095.00 in 1935. Also, tentative reports of town cooperation in these two states for 1937 show that 119 towns made available \$25,625.00. This amount includes \$4,050.00 which was not used in Maine during 1936 and was re-appropriated by 25 towns for 1937.

Table 58.-State and Local Cooperative Funds Spent in Conjunction with WPA Program in Northeastern States during 1935 and 1936

State	State Funds	County Funds		Town Funds		Individual Funds		Total
		No. Counties	Amount	No. Towns	Amount	No. Indiv.	Amount	
Maine	2,820.32	2	594.39	10	594.39	2	63.00	3,414.71
N. H.	1,859.80	2	937.00	8	347.75	2	63.00	3,194.55
Vt.	424.90	2	9,711.75	19	9,711.75	2	63.00	10,136.65
Mass.	3,197.47	2	6,872.70	15	6,872.70	176	1,125.70	11,195.87
R. I.	1,114.98	2		2		2		1,114.98
Conn.	1,408.40	2	176.00	1	176.00	2		1,582.40
N. Y.	43,350.54	2		2		2		43,350.54
N. J.	335.31	2		2		2		335.31
Pa.		2		2		2	63.00	63.00
Totals	54,509.72	2	\$987.00	53	\$17,702.59	178	\$1,188.70	\$74,388.01

*These individuals (nurserymen) also paid \$151.00 compensation to owners of cultivated Ribes destroyed in connection with sanitation projects.

Allocations

Table 59.

Appropriation 001089

State	Maine	N. H.	Vt.	Mass.	R. I.	Conn.	N. Y.	N. J.	Pa.	Tot.
Allocation Date of A-3a										
Original 7/22/55	\$255,262	\$250,587	\$151,285	\$157,669	\$20,212	\$51,127	\$421,804	\$2,958	\$200,749	\$1,221,000
Revisions 6/10/56	51,500	35,000	22,500	20,000	3,000	6,000	58,500	-	32,000	200,000
Inventory 7/3/56	26,000	18,500	15,000	15,000	2,000	3,500	37,000	1,000	18,000	200,000
Total Funds (001089)	\$249,762	\$254,087	\$141,785	\$150,669	\$19,212	\$48,627	\$402,304	\$3,958	\$186,749	\$1,421,000

Table 60.

Appropriation 201085

State	Maine	N. H.	Vt.	Mass.	R. I.	Conn.	N. Y.	N. J.	Pa.	Tot.
Allocation Date of A-3a										
Original 7/28/55	\$53,600	\$34,100	\$16,200	\$25,500	\$4,500	\$2,300	\$91,700	\$800	\$24,500	\$200,000
Revisions 8/24/56	-	25,500	10,000	-	-	-	25,000	-	7,500	70,000
Inventory 8/24/56	5,500	-	-	-	-	1,600	-	-	-	7,100
Revisions 9/15/56	46,500	52,500	33,200	30,000	2,900	7,000	69,000	600	57,000	200,000
Inventory 11/27/56	-	-	-	5,000	1,000	1,000	10,000	-	1,000	20,000
Revisions 11/27/56	-	14,000	5,000	-	-	-	-	-	-	19,000
Inventory 12/31/56	-	-	5,340	-	-	-	4,000	-	-	9,340
Total Funds (201085)	\$6,800	\$93,000	\$53,060	\$58,500	\$8,400	\$8,700	\$191,700	\$1,400	\$90,000	\$400,000
GRAND TOTAL (001089 + 201085)	\$249,762	\$352,087	\$194,845	\$209,169	\$27,612	\$57,327	\$594,004	\$5,358	\$256,749	\$1,621,000

Table 61.- Total W.P.A. Expenditures During The Calendar Years 1935 and 1936 For The Various Blister Rust Control Projects in The Northeastern States

State	Year	Supervision and B.R.C. Agent Activities	Eradication Assistants and Checkers	Ribes Eradication	Black Currant Elimination	Nursery Sanitation	Blister Rust Canker Elimination	Field Data	Totals
Maine	1935	5,642.79	5,088.60	80,785.14	-	-	-	9,414.39	100,930.92
	1936	15,376.85	14,825.78	178,648.09	-	-	-	29,153.26	238,003.98
	Total	21,019.64	19,914.38	259,433.23	-	-	-	38,567.65	338,934.90
N.H.	1935	6,302.24	4,104.95	60,440.47	-	-	-	12,598.20	83,445.86
	1936	16,287.71	14,596.10	175,273.84	-	599.00	-	32,565.44	239,122.09
	Total	22,589.95	18,701.05	235,714.31	-	399.00	-	45,163.64	322,567.95
Vt.	1935	4,019.91	3,424.52	25,665.40	-	-	578.85	5,396.77	39,085.45
	1936	12,364.89	8,946.50	111,262.03	-	218.27	959.95	18,963.17	152,714.81
	Total	16,384.80	12,371.02	136,927.43	-	218.27	1538.80	24,359.94	191,800.26
Mass.	1935	6,316.43	2,034.50	37,768.44	1157.00	-	-	4,412.80	51,689.17
	1936	9,558.22	4,750.12	81,289.47	555.75	822.90	-	15,289.87	112,266.35
	Total	15,874.65	6,784.62	119,057.91	1712.75	822.90	-	19,702.67	163,955.50
R.I.	1935	333.32	-	7,394.63	-	-	-	380.75	8,108.70
	1936	555.91	-	16,031.94	-	-	-	1,756.13	18,343.98
	Total	889.23	-	23,426.57	-	-	-	2,136.88	26,452.68
Conn.	1935	255.65	894.60	17,665.91	-	-	-	1,777.09	20,593.25
	1936	1,963.01	1,488.55	25,865.48	-	159.35	-	5,393.57	34,869.94
	Total	2,218.66	2,383.15	43,531.37	-	159.35	-	7,170.66	55,463.19
N.Y.	1935	12,962.66	6,337.35	118,658.78	-	-	9005.94	12,745.62	159,710.35
	1936	30,223.79	15,421.98	327,695.51	-	1093.25	8544.20	35,397.46	418,376.19
	Total	43,186.45	21,759.33	446,354.29	-	1093.25	17,550.14	48,143.08	578,086.54
N.J.	1935	102.13	435.25	1,869.33	-	-	-	-	2,406.71
	1936	69.09	556.00	1,992.97	-	-	-	-	2,618.06
	Total	171.22	991.25	3,862.30	-	-	-	-	5,024.77
Pa.	1935	3,216.81	2,967.20	43,159.03	-	-	-	6,276.84	55,619.88
	1936	10,990.68	12,986.03	144,887.11	-	238.02	-	22,291.65	191,393.43
	Total	14,207.49	15,953.23	188,046.14	-	238.02	-	28,568.49	247,013.37
Totals	1935	39,151.94	25,286.97	393,407.13	1157.00	-	9584.79	53,002.46	521,590.29
	1936	97,390.15	73,571.06	1,062,946.42	555.75	2930.79	9504.15	160,810.55	1,407,708.87
	Total	136,542.09	98,858.03	1,456,353.55	1712.75	2930.79	19,088.94	213,813.01	1,929,299.16

The additional WPA expenditure of \$61,186.66 was incurred at the Cambridge Office during 1935 and 1936 -

1935-1936 - \$24,845.22 - expenses \$6,386.66

The 1935-1936 expenditures for the various projects were as follows: Maine \$100,930.92; New Hampshire \$83,445.86; Vermont \$191,800.26; Massachusetts \$51,689.17; Rhode Island \$18,343.98; Connecticut \$26,452.68; New York \$578,086.54; New Jersey \$2,406.71; New York \$2,618.06; Pennsylvania \$247,013.37; Totals \$1,929,299.16

PERCENTAGE OF TOTAL WPA EXPENDITURES IN RESPECTIVE NORTHEASTERN STATES
PAID FOR EACH PROJECT DURING THE CALENDAR YEARS 1935 AND 1936

Legend






-  Black Current Elimination - Nursery Sanitation - Blister Rust
Canker Elimination
-  Gradication Assistants and Checkers
-  General Supervision and Blister Rust Control Agent Activities
-  Field Data
-  Ribes Eradication



Table 62.-Total Expenditures, By Cooperating Agencies, Under Federal W.P.A. Program
In Northeastern States During Calendar Years 1935 and 1936.

State	State Funds	Towns	Individuals	Counties	B.E. & P.Q.	W.P.A.	Total
Maine	2,820.32	594.39	-	-	-	338,934.90	342,349.61
N. H.	1,859.80	347.75	-	987.00	-	322,567.95	325,762.50
Vt.	424.90	9,711.75	-	-	-	191,800.26	201,936.91
Mass.	3,197.47	6,872.70	1,125.70	-	-	163,404.00*	174,599.87
R. I.	1,114.98	-	-	-	-	26,452.68	27,567.66
Conn.	1,406.40	176.00	-	-	675.00	55,463.19	57,720.59
N. Y.	43,350.54	-	-	-	-	578,086.54	621,437.08
N. J.	335.31	-	-	-	-	5,024.77	5,360.08
Penna.	-	-	63.00	-	-	247,013.37	247,076.37
Totals	54,509.72	17,702.59	1,188.70	987.00	675.00	1,928,747.66	2,003,810.67

* In addition \$551.50 W.P.A. money was expended in conjunction with the E.C.W. Program.

Table 63.-Total Cooperative Expenditures, By Projects, Under Federal W.P.A. Program
During Calendar Years 1935 and 1936.

State	Supervision and BRCAA	Ribes Eradication	Erad. Assistants and Checkers	Black Currant Elimination	Nursery Sanitation	Ribes Comp.	Treatment Diseased Pines	Field Data		Total
								Mapping	General	
Maine	21,019.64	260,156.10	20,404.38	-	-	-	-	40,769.49	-	342,519.00
N. H.	22,589.95	237,307.04	20,284.55	-	399.00	-	-	36,640.98	8,540.98	325,770.00
Vt.	16,384.80	146,920.02	12,491.08	-	242.27	-	1,538.80	24,359.94	-	201,936.91
Mass.	15,374.65	127,813.03	6,233.12	1,955.65	1,261.38	225.60*	-	19,369.51	1,867.13	174,599.87
R. I.	889.23	23,721.30	-	-	-	-	-	2,957.13	-	27,567.66
Conn.	2,218.66	43,772.90	2,783.10	-	159.35	-	-	5,499.52	3,287.06	57,720.59
N. Y.	43,186.45	484,488.79	26,208.09	-	1,144.21	-	17,550.14	48,859.40	-	621,437.08
N. J.	171.22	4,160.40	1,028.46	-	-	-	-	-	-	5,360.08
Penna.	14,207.49	188,046.14	15,953.23	-	301.02	-	-	28,568.49	-	247,076.37
Totals	136,542.09	1,516,385.72	105,386.01	1,955.65	3,507.23	225.60	19,088.94	207,024.26	13,695.17	2,003,810.67

** Paid by State.

64. - WPA Obligations for Wages and Salaries to December 31, 1936

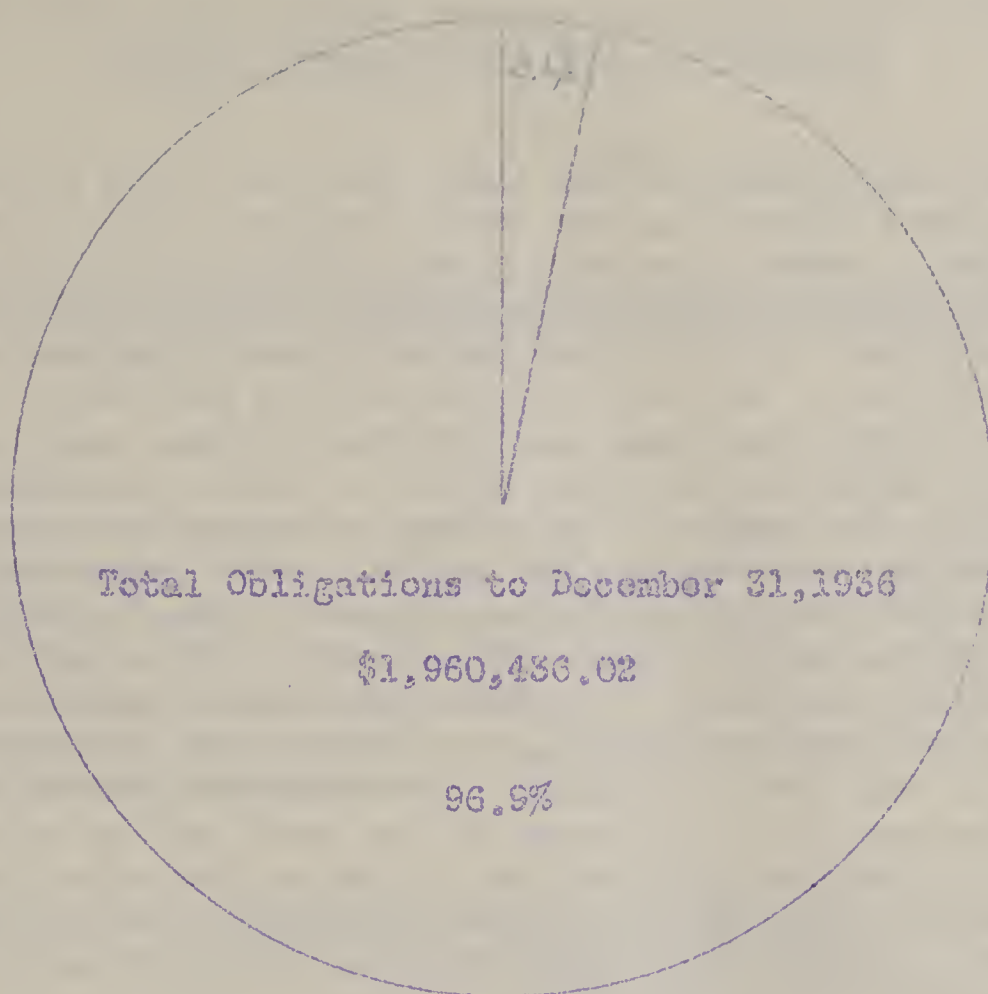
State	Wages of Security-Wage Workers		Salaries of Appointees	Total Wages and Salaries
	Relief	Non-Relief		
Maine	254,326.89	29,265.96	29,770.12	313,362.97
New Hampshire	222,936.68	49,466.17	30,445.16	302,846.01
Vermont	144,786.60	14,344.42	19,951.55	179,082.57
Massachusetts	152,414.43	5,609.07	24,786.45	182,809.95
Rhode Island	22,943.57	2,427.54	833.30	26,204.41
Connecticut	46,855.48	1,198.93	2,470.50	50,524.91
New York	480,739.77	26,624.97	56,743.34	564,108.08
New Jersey	3,810.55	-	902.75	4,713.30
Pennsylvania	193,318.40	11,208.73	23,866.09	235,393.22
Totals	\$1,527,132.37	\$140,145.79	\$139,767.26	\$1,857,045.42
% of Total	82.2	7.6	10.2	100.0

Table 65. - WPA Obligations for Expenses to December 31, 1936

State	Purchases	Travel		Total
		Appointees	Crew Transportation	
Maine	7,560.28	7,171.69	10,839.96	25,571.93
New Hampshire	4,389.33	5,384.54	9,943.07	19,721.94
Vermont	5,461.07	4,828.55	2,428.07	12,717.69
Massachusetts	9,385.98	2,819.29	77.14	12,282.41
Rhode Island	26.65	.50	221.12	248.27
Connecticut	2,078.07	1,519.31	1,340.90	4,938.28
New York	6,311.90	3,534.95	2,131.63	13,978.48
New Jersey	129.96	181.52	-	311.47
Pennsylvania	4,632.48	4,113.79	4,673.88	13,620.15
Totals	41,975.71	29,554.12	31,890.77	103,390.60
% of Total	40.6	28.6	30.8	100.0

Table 66. - Status of WPA Funds As of December 31, 1936

State	Total Allotment	Total Obligations	Unencumbered Balance December 31, 1936
Maine	346,562.00	338,934.90	7,627.10
New Hampshire	332,087.00	322,567.95	9,519.05
Vermont	194,843.00	191,800.26	3,042.74
Massachusetts	209,169.00	195,092.36	14,076.64
Rhode Island	27,612.00	26,452.68	1,159.32
Connecticut	57,327.00	55,463.19	1,863.81
New York	594,004.00	578,086.64	15,917.46
New Jersey	6,358.00	5,024.77	333.23
Pennsylvania	256,749.00	247,013.37	9,735.63
Totals	2,023,711.00	1,960,436.02	63,274.98
% of Total	100.0	96.9	3.1

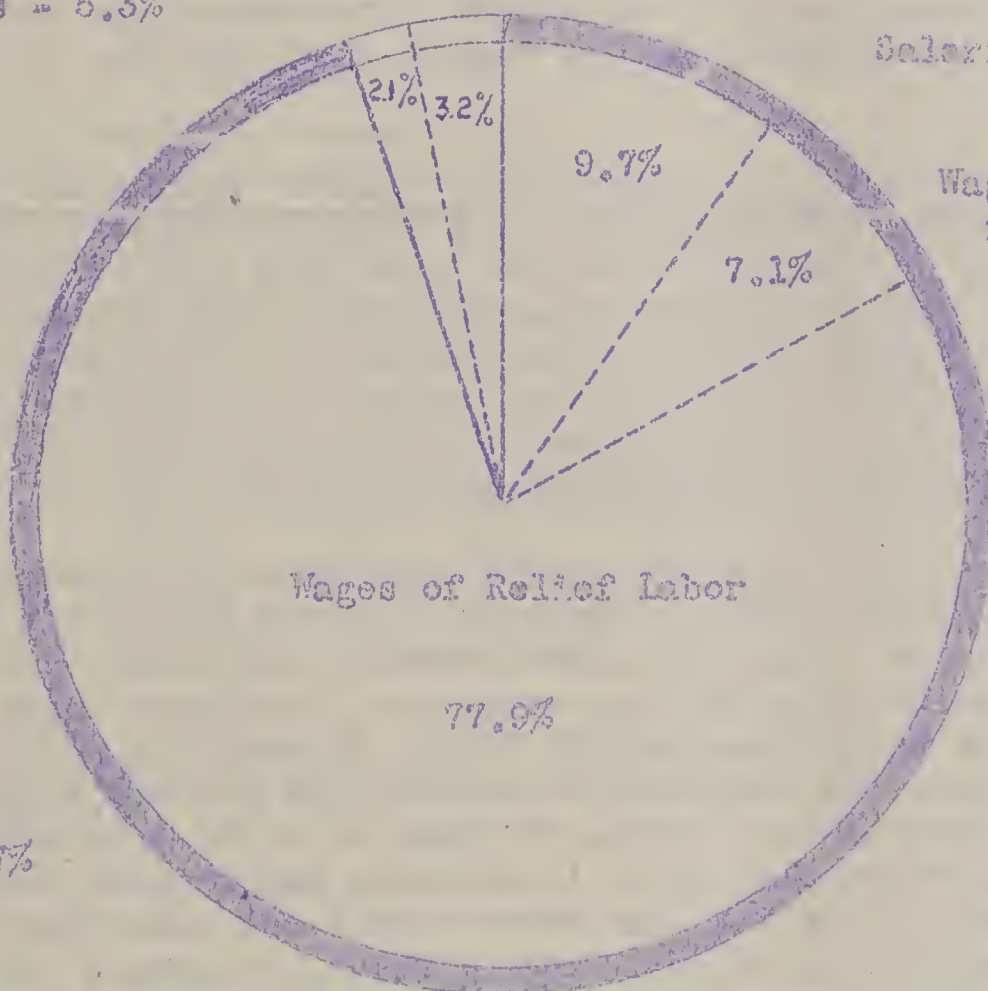


Unobligated balance
12/31/36
\$63,274.97

W.P.A. ALLOTMENTS - \$2,023,711.

Expenses - 5.3%

Purchases
Travel



Wages and Salaries - 94.7%

TOTAL OBLIGATIONS - \$1,960,436.02

- (1) Supplies, materials and equipment (1034 vouchers).
- (2) Travel, subsistence and miscellaneous (1012 vouchers) for supervisory personnel consisting of 82 supervisors, 29 district leaders, 4 state leaders and 1 regional rep - also all transportation for W.P.A. cases.

BLISTER RUST CONTROL ACTIVITIES UNDER C.W.A. AND E.R.A.
PROGRAMS IN THE NORTHEASTERN STATES

Blister rust control activities under the C.W.A. and E.R.A. Programs have been combined in this report, as the latter program was in reality a continuation of the former. Control projects were conducted with C.W.A. and E.R.A. funds or labor in Maine, Massachusetts, Connecticut, and New York during the period 1933-1935, inclusive. All of these projects were sponsored by state or local officials. The Division of Plant Disease Control cooperated by furnishing technical supervision through its state and district blister rust control leaders. These men had no direct authority over the C.W.A. or E.R.A. personnel, but aided the programs by selecting the areas to be worked, assisting in training the field personnel, and in checking their work. The projects were conducted under C.W.A. and E.R.A. rules and regulations governing employment, hours of work, wage scales, etc. In some instances the projects were over-manned; a first aid employee and a time-keeper accompanying the crew. The labor was inexperienced and even several of the supervisors had no previous training in control work and lacked other necessary qualifications. Our district leaders did everything possible in an advisory capacity, to increase the efficiency of the work; but in spite of their efforts, the standard of productivity was below that of the other Emergency programs, especially those in which these men had direct authority. In some cases it was possible for the states to provide experienced foremen to supervise the C.W.A. and E.R.A. crews, thus assuring more efficient results.

In Maine, an allotment of E.R.A. money was obtained during 1934 for Ribes eradication work in the town of North Bridgton, where a crew of 12 men was employed part time during the period May 13 - August 31. The state paid the wages of a foreman for this project, which was under the technical supervision of district leader Curtis.

A state sponsored C.W.A. blister rust canker elimination project was conducted in three of the Massachusetts districts during the period November 27, 1933 to April 19, 1934. C.W.A. laborers were also used on a special Ribes nigrum location project and on pine and control area mapping work in Massachusetts from December 11, 1933 to April 17, 1934. During 1935, two of the Massachusetts district leaders supervised E.R.A. Ribes eradication projects sponsored by three towns and approved by the State E.R.A. Administrator. This control work was restricted to the protection of white pines in publicly-owned plantations.

In Connecticut, an extensive C.W.A. cultivated Ribes survey was conducted during the period December 4, 1933 to March 22, 1934 to locate all Ribes nigrum and any other cultivated Ribes within 900 feet of white pine areas. This project, which was sponsored by the State Forestry Department, was continued under the E.R.A. Program during 1934 and up to December 27, 1935. In addition to the cultivated Ribes survey, the project was broadened to include the removal of all Ribes nigrum plants and other cultivated Ribes within 900 feet of white pine stands of commercial importance, mapping of white pine areas in southern and central Connecticut, and wild Ribes eradication work in sections where it was not practicable to carry on such projects under the regular, E.C.W., and Federal W.P.A. Programs. An average of 70 persons were given much needed employment on the C.W.A. work in Connecticut, while the number of E.R.A. employees averaged 91 and 59, respectively, in 1934 and 1935.

E.R.A. crews were also used on Ribes eradication work in five towns in three of the New York districts during 1934, with an average of 20 men, including one crew from a transient camp in Barbers' district. Similar E.R.A. projects were carried on in eight New York townships during 1935. The state cooperated by contributing the services of crew foremen to supervise these E.R.A. projects.

Accomplishments in Blister Rust Control Under The C.W.A. and E.R.A. Programs
In Northeastern States, 1933-1935, Inclusive.

Ribes eradication

E.R.A. Ribes eradication projects were conducted in Massachusetts, Connecticut, and New York during 1935. All of the costs were paid from E.R.A. funds except \$60.00 town money spent for crew transportation in Connecticut, and \$1,553.76 state funds expended for crew foremen in New York. Table summarizes the results of the 1935 E.R.A. work in these three states. The accomplishments in Massachusetts were not commensurate with the expenditures involved, and may be attributed in part to lack of adequate trained supervision.

Table 67 - Summary of Ribes Eradication Work Under E.R.A. Program
In Northeastern States During 1935.

(Excludes nursery sanitation and special Ribes nigrum elimination work)

State	Type of Erad.	Total Acreage Worked	Ribes Pulled		Total Man Days	Cost			Per Acre	
			Wild	Cult.		State	E.R.A.	Total	Cost Ribes	Days
Mass.	Initial	10	571	-	15	-	63.60	63.60	6.36	57.1
	Re-Erad.	2,897	78,562	306	2513	-	10,934.60	10,934.60	3.77	27.1
	Total	2,907	79,133	306	2528	-	10,998.20	10,998.20	3.78	27.3
Conn.	Initial	7,953	25,867	1,073	1773	*60.00	7,793.05	7,853.05	.987	8.3
	Re-Erad.	-	-	-	-	-	-	-	-	-
	Total	7,953	25,867	1,073	1773	60.00	7,793.05	7,853.05	.987	8.3
N. Y.	Initial	3,049	78,297	44	792	1,328.00	1,174.90	2,502.90	.821	25.7
	Re-Erad.	1,005	6,532	-	139	225.76	266.43	492.19	.490	6.5
	Total	4,054	84,829	44	931	1,553.76	1,441.33	2,995.09	.739	20.3
Totals	Initial	11,012	104,735	1,117	2580	1,388.00	9,031.55	10,419.55	.948	9.6
	Re-Erad.	3,902	85,094	306	2652	225.76	11,201.03	11,426.79	2.93	21.8
	Total	14,914	189,829	1,423	5232	1,613.76	20,232.58	21,846.34	1.46	12.7

* Expenditure by one town in Connecticut.

Basis of Costs: Actual cost of laborers and foremen engaged in locating and pulling Ribes; crew transportation; and miscellaneous expenses for trail paper, picks, etc.

Table 68 - Ribes Eradication Work Under C.W.A. and P.W.A. Programs
in Northeastern States, 1934-1935, inclusive.
(Excludes nursery sanitation and special black current elimination projects)

By Years

Year	Type of Erad.	Acreage Worked	Ribes Pulled		Total Man Days	Cost			Per Acre				
			Wild	Cult.		Towns	State	P.W.A.	C.W.A. & E.R.A.	Total	Cost	Ribes	Man Days
1934	Initial	9,535	69,402	483	1,920	1,083	905.32	238.20	5,698.87	7,925.39	.831	7.3	.20
	Re-Erad.	3,802	73,492	-	618	-	332.90	-	1,971.45	2,304.35	.606	19.3	.10
	Total	13,337	142,894	483	2,538	1,083	1,238.22	238.20	7,670.32	10,229.74	.767	10.7	.19
1935	Initial	11,012	104,735	1,117	2,530	60	1,328.00	-	9,031.55	10,419.55	.946	9.5	.23
	Re-Erad.	3,902	85,094	306	2,652	-	225.76	-	11,201.03	11,426.79	2.93	21.8	.68
	Total	14,914	189,829	1,423	5,182	60	1,553.76	-	20,232.58	21,846.34	1.46	12.7	.35
Totals	Initial	20,547	174,137	1,600	4,500	1,143	2,233.32	238.20	14,730.42	18,344.94	.893	8.5	.24
	Re-erad.	7,704	158,586	306	3,270	-	558.66	-	13,172.48	13,731.14	1.78	20.6	.42
	Total	28,251	332,723	1,906	7,770	1,143	2,791.98	238.20	27,902.90	32,076.08	1.14	11.8	.28

By States

State	Type of Erad.	Acreage Worked	Ribes Pulled		Total Man Days	Cost			Per Acre				
			Wild	Cult.		Towns	State	P.W.A.	C.W.A.& E.R.A.	Total	Cost	Ribes	Days
Maine	Initial	-	-	-	-	-	-	-	-	-	-	-	-
	Re-Erad.	2,549	66,688	-	401	-	70.10	-	1,426.80	1,496.90	.587	26.2	.15
	Total	2,549	66,688	-	401	-	70.10	-	1,426.80	1,496.90	.587	26.2	.15
Mass.	Initial	10	571	-	16	-	-	-	63.60	63.60	6.36	57.1	1.5
	Re-Erad.	2,897	78,562	306	2,513	-	-	-	10,934.60	10,934.60	3.77	27.1	.87
	Total	2,907	79,133	306	2,528	-	-	-	10,998.20	10,998.20	3.78	27.2	.87
Conn.	Initial	16,118	48,193	1,556	3,110	1,143.00	8.35	238.20	12,698.20	14,087.75	.874	3.0	.19
	Re-Erad.	-	-	-	-	-	-	-	-	-	-	-	-
	Total	16,118	48,193	1,556	3,110	1,143.00	8.35	238.20	12,698.20	14,087.75	.874	3.0	.19
N. Y.	Initial	4,419	125,373	44	1,375	-	2,224.97	-	1,968.62	4,193.59	.949	28.4	.31
	Re-Erad.	2,258	13,336	-	356	-	488.56	-	811.08	1,299.64	.576	5.9	.16
	Total	6,677	138,709	44	1,731	-	2,713.53	-	2,779.70	5,493.23	.823	20.3	.23
Totals	Initial	20,547	174,137	1,600	4,500	1,143.00	2,233.32	238.20	14,730.42	18,344.94	.893	8.5	.22
	Re-Erad.	7,704	158,586	306	3,270	-	558.66	-	13,172.48	13,731.14	1.78	20.6	.42
	Total	28,251	332,723	1,906	7,770	1,143.00	2,791.98	238.20	27,902.90	32,076.08	1.14	11.8	.28

Basis of costs: Actual cost of laborers and foremen engaged in locating and pulling Ribes; crew transportation; miscellaneous expenses for trail paper, picks, etc.

Elimination of Ribes Nigrum (European Black Current)

Black current elimination work under the E.R.A. Program during 1935 was restricted to Connecticut. This project was inaugurated under the C.W.A. Program on December 4, 1933 and continued under the E.R.A. Program after March 22, 1934. The results accomplished on this work in Connecticut during the calendar year 1935 were as follows:

No. towns worked	68
No. towns completed	65
No. properties inspected	168,715
No. patches located	12,676
No. Ribes pulled (Nigrum	4,701
Other cultivated	1,198
Total man days	6,607
Cost { Town	\$60.00
State	93.13
E.R.A.	35,330.30
Total	35,483.43

Table 69 - Special Ribes Nigrum Elimination Work Under C.W.A. and E.R.A. Programs in Northeastern States, 1933-1936, Inclusive.

State	Program	No. Properties Inspected	No. Patches Located	Ribes Pulled		Total Man Days	Towns & State	Cost		
				Nigrum	Other Cult.			E.C.W.	P.W.A.	E.R.A. & C.W.A.
Mass.	C.W.A.	174,701	1,280	-	-	448	-	-	-	2,688.11
	C.W.A.	21,049	4,124	-	-	1,402	-	-	348.24	5,938.10
Conn.	E.R.A.	240,335	25,858	7,110	23,701	11,675	1502.66	218.40	654.55	560.00
	Total	261,384	29,982	7,110	23,701	13,077	1502.66	218.40	1,002.79	654.55
	C.W.A.	195,750	5,404	-	-	1,850	-	-	348.24	8,626.21
Totals	E.R.A.	240,335	25,858	7,110	23,701	11,675	1502.66	218.40	654.55	560.00
	Total	436,085	31,262	7,110	23,701	13,525	1502.66	218.40	1,002.79	68,191.71

* Of this amount \$901.00 was expended by towns.

Basis of costs: Actual cost of personnel employed on Ribes nigrum elimination work, cost of crew transportation, and miscellaneous expenses for supplies.

Pine and Control Area Mapping

Pre-eradication survey work under the C.W.A. Program was limited to Massachusetts where such activities were performed in 16 townships during the period December 11, 1933 to April 17, 1934. A total of 45,761 acres was mapped in detail and an additional 34,138 acres examined but not mapped due to lack of sufficient white pine to justify the cost of control work. This mapping work under the C.W.A. program in Massachusetts required 592 man days labor by an average of 30 C.W.A. employees and cost \$3,112.25, all of which was paid from C.W.A. funds.

Under the E.R.A. Program in Connecticut, pre-eradication survey work was conducted in 132 towns during 1934 and 1935. A total of 213,971 acres was mapped in detail and an additional 2,139,370 acres examined and definitely eliminated from control work because of insufficient white pine. This E.R.A. mapping project required 4,205 man-days labor and cost \$22,211.70, all of which was paid by the E.R.A.

Blister Rust Canker Elimination

Blister rust canker elimination under the C.W.A. Program was limited to Massachusetts during the period November 27, 1933 to March 19, 1934. A total of 4,341 acres, containing approximately 4,648,000 white pines, were examined on municipally-owned lands. A total of 17,303 pines with stem cankers were destroyed, and 17,511 branch cankers were pruned from 12,784 other trees. This project consumed 5,409 man days of labor and cost \$24,255.74. This work was performed under many handicaps including the most severe winter experienced in recent years.

Table 70 - Total E.R.A. Expenditures During The Calendar Year 1935 For The Various Blister Rust Control Projects in The Northeastern States

State	Ribes Eradication	Black Currant Elimination	Field Data	Totals
Mass.	\$10,998.20	-	-	\$10,998.20
Conn.	7,793.05	35,330.80	20,429.80	63,553.15
N. Y.	1,441.33	-	-	1,441.33
Totals	20,232.58	35,330.80	20,429.80	75,992.68
% of Total	26.6	46.5	26.9	100.0

Table 71 - Total Expenditures, By Cooperating Agencies, Under C.W.A. and E.R.A. Programs In Northeastern States During Period 1934-1936, Inclusive.

State	State Funds	Towns	E.C.W.	C.W.A.	P.W.A.	E.R.A.	Total
Maine	70.10	-	-	-	-	1,426.80	1,496.90
Mass.	-	-	-	31,134.08	-	10,998.20	42,132.28
Conn.	610.01	2,044.00	218.40	5,938.10	1,240.99	94,478.40	104,529.90
N. Y.	2,713.53	-	-	-	-	2,779.70	5,493.23
Total	3,393.64	2,044.00	218.40	37,072.18	1,240.99	109,683.10	153,652.31
% of Total	2.2	1.4	0.1	24.1	0.8	71.4	100.0

Table 72 - Total Cooperative Expenditures, By Projects, Under C.W.A. and E.R.A. Programs In Northeastern States During Period 1934-1936, Inclusive.

State	Ribes Eradication	Eradication Assistants and Checkers	Black Currant Elimination	Treatment Diseased Pines	Field Data (Mapping)	Total
Maine	1,496.90	-	-	-	-	1,496.90
Mass.	10,998.20	1,077.98	2,688.11	24,255.74	3,112.25	42,132.28
Conn.	14,087.75	-	68,230.45	-	22,211.70	104,529.90
N. Y.	5,493.23	-	-	-	-	5,493.23
Total	32,076.08	1,077.98	70,918.56	24,255.74	25,323.95	153,652.31
% of Total	20.9	0.7	46.2	15.7	16.5	100.0

BLISTER RUST CONTROL ACTIVITIES UNDER THE
A.R.A. PROGRAM IN THE NORTHEASTERN STATES.

During 1936, our Division cooperated with the Agricultural Resettlement Administration in conducting Ribes eradication work on lands purchased by the Administration in Rhode Island, Connecticut, New York, and Pennsylvania. The A.R.A. furnished all the crew personnel and paid all of the costs of the control work. Technical supervision was provided by the state or district blister rust control leaders in the sections where the projects were located. Effective cooperation was obtained from the A.R.A. officials, and reports from our leaders indicated that good control results were obtained.

In Rhode Island, an average of 25 men were employed on the A.R.A. project in the town of Exeter during the period June 1 to July 31, 1936. The work was directed by a former C.C.C. blister rust control foreman, under the technical supervision of the acting state leader.

A crew of nine laborers was used on the A.R.A. work in one town in Connecticut during the period May 25 to July 13, 1936. At the request of the A.R.A. officials, the state blister rust control leader developed plans for the project and gave general supervision to the field work. The areas worked by the A.R.A. crew were re-examined by a C.C.C. checker, and the crew re-worked any portions where the results were not satisfactory.

A.R.A. projects were conducted in eight townships in two of the New York blister rust control districts during the period from June to September, 1936, inclusive. A maximum of 71 A.R.A. employees were assigned to this work under the technical direction of temporary district blister rust control leaders Kopp and Knowles.

Similar A.R.A. projects were also performed in five Pennsylvania townships from May 11 to July 30, 1936 by an average of 32 workers.

With the exception of New York, the average cost of the A.R.A. work during 1936, as indicated in Table 73, is fairly comparable to that of similar work conducted under some of the other emergency programs. On the other hand the number of Ribes pulled per acre is below average in practically every instance. The relatively high per acre cost of the A.R.A. work was chiefly due to the necessity of training an inexperienced personnel. Reports from our leaders indicate, however, that the quality of the work was satisfactory.

After the close of the 1936 field season, our state leader in Maine ascertained that the Agricultural Resettlement Administration had independently conducted Ribes eradication work on 2,494 acres under their jurisdiction in three townships. The accomplishments of this work in Maine were not included in the A.R.A. summary (Table 73), since complete data were not available. An analysis of the Ribes and cost figures submitted indicated that the work was conducted without proper supervision. The assistance of the district blister rust control leaders in Maine will again be offered to the A.R.A. officials in an effort to improve the efficiency of any future control work to be performed under this program.

Table 73 summarizes results of Ribes eradication work accomplished under the A.R.A. program during 1936.

Table 73 - Summary of Ribes Eradication Work Conducted Under A.R.A. Program
In Northeastern States During 1936.

State	Type of Erad.	Acreage		Ribes Pulled		Total Man Days	Total Cost (All A.R.A.)	Per Acre		
		Total Worked	Pine Protected	Wild	Cult.			Cost	Ribes	Man Days
N. Y.	Re-Erad.	2,369	790	6,177	-	465	1,640.00	.692	2.6	.20
Conn.	Initial	1,214	182	6,337	2	111	424.81	.350	5.2	.09
N. Y.	Initial	2,829	1,886	38,939	30	2,208	7,270.58	2.57	13.8	.78
	Initial	3,716	615	34,632	10	698	2,858.19	.769	9.3	.19
Penna.	Re-Erad.	264	60	155	-	54	218.40	.827	0.6	.20
	Total	3,980	675	34,787	10	752	3,076.59	.773	8.7	.19
	Initial	7,759	2,683	79,908	42	3,017	10,553.58	1.36	10.3	.39
Totals	Re-Erad.	2,633	850	6,332	-	519	1,858.40	.706	2.4	.20
	Total	10,392	3,533	86,240	42	3,536	12,411.98	1.19	8.3	.34

Basis of costs: Includes actual cost of laborers and foremen engaged in locating and pulling Ribes, cost of crew transportation, and miscellaneous expenses for trail paper, picks, etc.

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BLISTER RUST CONTROL ACTIVITIES UNDER STATE W.P.A. PROGRAM
IN CONNECTICUT

After the termination of the special state E.R.A. blister rust control project in Connecticut on December 27, 1935, the Connecticut Agricultural Experiment Station sponsored the continuation of this work as a special project under the state W.P.A. Program. This was the only blister rust control project conducted under a state W.P.A. program in the Northeastern States.

The purpose of the special state project in Connecticut during 1936 was to map the white pine areas and obtain information on blister rust infection conditions in southern Connecticut where very little control work has been performed in previous years. Such data were needed in order to develop a blister rust control policy and intelligently plan future control work. In addition to the mapping and pine infection survey activities, a small amount of Ribes eradication was performed under this program during 1936 in three towns where it was not practicable to do the work under any of the other programs.

Field work under the State W.P.A. Program in Connecticut was started on February 25, 1936, final approval of the project being delayed for several weeks. Due to a W.P.A. regulation prohibiting any new labor assignments at that time, it was necessary to arrange for the transfer of laborers from other active W.P.A. projects in the state. Considerable difficulty was encountered in obtaining the quota of 65 men. Practically all of the workers, including the supervisors, were inexperienced and many lacked adequate educational background for such specialized projects. The training of the men was difficult and expensive. Two regional office employees assisted in the training work, especially in mapping procedure and identification of blister rust cankers. The state was divided into four districts, each having a W.P.A. supervisor in charge of the field activities of 15 laborers. In addition, one state supervisor was employed to give direct supervision to the entire project and handle all administrative matters. The state blister rust control leader cooperated in developing detailed plans for the project and giving technical supervision to the field activities.

Accomplishments in Blister Rust Control Under The State W.P.A. Program
In Connecticut During Calendar Year 1936.

Pine Infection Survey

The pine infection survey was the major field project under the State W.P.A. Program in Connecticut during 1936. The men assigned to this project worked in pairs and used block maps, prepared under the E.R.A. Program, to denote the location of the infected pines. Data were recorded on the height, age and diameter of each infected tree, and on the number, age and kind of blister rust cankers.

The results of this pine infection survey work during 1936 were as follows:

No. towns worked.....	52
No. acres of white pine examined.....	10,337
No. infected white pines located.....	2,257
No. blister rust cankers found.....	4,457
% of cankers originating during period 1915-1925, Incl. ...	21.9
" " " " " 1926-1928 "	55.3
" " " " " 1929-1935 "	22.8*

* It is quite probable that the inexperienced workers overlooked many young cankers.

Results of pine infection survey (continued)

Percentage of total cankers found in respective counties:

New Haven 55%, Fairfield 24.8%, South Windham 12.1%, South Litchfield 7.5%, South Hartford 0.6% and New London 0.1%.

Man days: field labor, 5,203; office work on maps, 870; and supervision including clerk, 1,204; Total 7,277

Cost: field labor; \$22,963.68; office work on maps, \$3,933.32; supplies, \$141.72; supervision, clerk, office rent, \$10,067.12; Total.....37,105.84

Cost: Towns, \$509.30; State, \$396.37; State WPA \$36,200.17; Total.... 37,105.84

The town funds represent an arbitrary charge for office space furnished to the State W.P.A. personnel by three towns, while the state money was for supplies used on the project and office space at New Haven.

Line and Control Area Mapping

Pre-eradication survey work was conducted in conjunction with the pine infection survey in five Connecticut townships during 1936. A total of 36,706 acres was mapped in detail as a result of 415 man days labor. In addition, 69 man-days were spent working in the office on maps, and 96 man-days on supervision and clerical work. The total cost of the mapping project was \$2,923.95, or 7.9 cents per acre, for field and office work; \$31.68 was paid by the state and \$40.70 by one town.

Ribes Eradication

A small amount of Ribes eradication work was performed during 1936 under the State W.P.A. Program in three townships in Connecticut where it was impracticable to use E.C.W. crews or conduct the work under the Federal W.P.A. Program due to the location of the projects. An average of nine laborers was used for 465 man days on this control work. The results accomplished were as follows:

Total acreage examined.....	1,989
Acreage pine protected	215
No. wild Ribes pulled.....	1,396
No. cultivated Ribes pulled.....	97
Total man days	465
(Individuals (two).....	\$346.00
Cost (State	32.35
(W.P.A.	1,838.98
(Total	2,217.33
Cost per acre.....	1.11
Ribes per acre.....	0.7
Man days per acre.....	0.23

The individual funds were used to pay part of the labor cost, while the state money was for miscellaneous supplies. The high cost per acre can be attributed to the inexperienced personnel, the scattered distribution of the jobs, and the stripping of all control areas.

Total Expenditures, By Cooperating Agencies, Under State W.P.A.
Program in Connecticut During 1936

The total cost of the State W.P.A. project in Connecticut during the calendar year 1936 was \$42,247.12. The expenditures by the various cooperating agencies were as follows: State, \$460.40; Towns, \$550.00; Individuals, \$346.00; and W.P.A. \$40,890.72.

Table 74 - Total Cooperative Expenditures, By Projects, Under State W.P.A.
Program in Connecticut During 1936.

Project			Amount Expended	% Total
Field Data	Infection Studies	Field and Office Work*	\$27,038.72	64.0
		Supervision	10,067.12	23.8
	Mapping	Field and Office Work*	2,119.46	5.0
		Supervision	804.49	1.9
Ribes Eradication			2,217.33	5.3
Total			\$42,247.12	100.0

*Other than supervision

The supervision item includes the salaries and expenses of the five supervisors, office space and a clerk. It represents 25.7 percent of the total cost of the project and appears to be an excessive amount. However, the specialized type of work and the inexperience of the personnel demanded closer supervision than would ordinarily be necessary.

BLISTER RUST CONTROL ACTIVITIES UNDER S.C.S. PROGRAM
IN NORTHEASTERN STATES

During 1936, our Division cooperated with the Soil Conservation Service on control projects in New Jersey and Pennsylvania. In New Jersey, 18 S.C.S. laborers and two state employees were used on initial Ribes eradication work in the environs of one S.C.S. nursery during the period May 4 to June 19, 1936. An average of 71 enlisted men and 6 technical foremen were assigned to Ribes eradication work conducted from five S.C.S. camps in Pennsylvania from June 15 to October 2, 1936. The state cooperated on this S.C.S. work in Pennsylvania by paying part of the salary of one of the technical foremen.

The state blister rust control leaders in New Jersey and Pennsylvania assisted the S.C.S. officials in developing plans for the projects and gave technical supervision to the field work. One employee from the regional blister rust control office also assisted in training the S.C.S. personnel and in selecting areas to be worked. Reports from our leaders indicate that good cooperation was received from the S.C.S. officials and that effective control work was performed by the eradication crews.

Accomplishments in Blister Rust Control Under the S.C.S.
Program in Northeastern States During 1936.

Ribes Eradication

Ribes eradication work was conducted in 13 towns under the S.C.S. Program in Pennsylvania during the 1936 season. An average of 71 S.C.S. laborers were given 2,042 man days employment on the project at a total cost of \$3,165.38, all of which was paid from S.C.S. funds. The six men assigned to supervise this S.C.S. project worked a total of 189 man days at a cost of \$1,079.60, of which \$149.60 was paid by the state. Of the total 4,326 acres worked in Pennsylvania, 494 acres was on state lands and the remainder on privately-owned properties.

The high per acre cost of the re-eradication work can be attributed to the inexperienced personnel from one camp, the stripping of the control areas, and the small acreage involved (214 acres). Table 75 summarizes the results accomplished.

Table 75 - Summary of Ribes Eradication Work Under the S.C.S. Program
In Pennsylvania During 1936.

Type of Erad.	Total Acreage		Ribes Pulled		Total Man Days	Total Cost (All S.C.S.)	Per Acre		
	Worked	Pine Protected	Wild	Cult.			Ribes	Man Days	Cost
Initial	4,112	143	67,793	155	1,632	2,529.65	16.5	.40	.615
Re-Erad.	214	26	2,190	-	410	635.73	10.2	1.92	2.97
Total	4,326	169	69,983	155	2,042	3,165.38	16.2	.47	.732

Basis of costs: Includes total time of enlisted personnel figured at rate of \$1.50 per eight hour man day - cost of crew transportation.

Nursery Sanitation

Such activities under the S.C.S. Program were limited to New Jersey where initial control work was performed around one nursery during 1936. A total of 195 acres was examined and 1,538 wild Ribes and 65 cultivated bushes removed. This work required 102 man days labor by an average of 18 laborers at a cost of \$77.25 to the state and \$228.00 to the S.C.S. or a total of \$305.25.

Table 76 - Total Expenditures, By Cooperating Agencies, Under S.C.S. Program
In Northeastern States During 1936.

State	State Funds	S.C.S.	Total
N.J.	77.25	228.00	305.25
Penna.	149.60	4,095.38	4,244.98
Totals	226.85	4,323.38	4,550.23

Table 77- Total Cooperative Expenditures, By Projects, Under S.C.S. Program
In Northeastern States During 1936.

State	Ribes Eradication	Eradication Assistants and Checkers	Nursery Sanitation	Total
N.J.	-	-	305.25	305.25
Penna.	3,165.38	1,079.60	-	4,244.98
Totals	3,165.38	1,079.60	305.25	4,550.23

BLISTER RUST CONTROL ACTIVITIES UNDER N.Y.A. PROGRAM
IN NORTHEASTERN STATES

Blister rust control activities under the N.Y.A. Program have been limited to Pennsylvania where a six-man crew was used on Ribes eradication work in one township during the period May 18 to June 11, 1936. The state cooperated on this project by furnishing the services of a foreman. The results accomplished were as follows:

Total acreage worked.....	348
Acreage of pine protected.....	66
No. wild Ribes pulled.....	4242
Total man days.....	84
(State	\$100.00
Cost (N.Y.A.	220.80
(Total	320.80
Cost per acre.....	0.922
Ribes per acre.....	12.2
Man days per acre.....	0.24

A few of the other Northeastern States also considered using N.Y.A. personnel on blister rust control work. However, due to the limited number of hours the boys were available and their inexperience, it was difficult to develop a worthwhile program, especially when the state had to employ its foremen on a full time basis.

BLISTER RUST CONTROL ACTIVITIES AND ACCOMPLISHMENTS
UNDER ALL PROGRAMS IN THE NORTHEASTERN STATES
DURING 1955 AND 1936

**Table 78.--Personnel Employed on Blister Rust Control Work
in Northeastern States during 1935 and 1936**

1935

State		Maine	N.H.	Vt.	Mass.	R.I.	Conn.	N.Y.	N.J.	Pa.	Totals
State Leaders		1	1	1	1	1	1	1	1	1	9
BRC Leaders		4	6	3	5	-	-	9	-	3	30
Supervisors, Technical Foremen and Checkers	Regular	-	-	-	-	-	-	-	-	13	13
	E.C.W.	44	16	4	11	12	15	71	-	92	265
	P.W.A.	-	5	1	3	-	1	-	-	1	11
	W.P.A.	10	10	7	4	-	2	13	1	8	55
	E.R.A.	-	-	-	-	-	5	-	-	-	5
	Total	54	31	12	18	12	23	84	1	101	336
Crew Men (Includes crew fore- men, scouts, strawbosses & laborers)	Regular	236	366	-	16	-	-	42	-	34	694
	E.C.W.	509	201	97	141	237	182	823	-	1183	3373
	P.W.A.	117	165	22	44	13	12	34	5	22	434
	W.P.A.	582	535	277	249	49	113	871	13	474	3163
	E.R.A.	-	-	-	58	-	65	44	-	-	167
	Total	1444	1267	396	508	299	372	1814	18	1715	7831
Total		1503	1305	412	532	312	396	1908	20	1818	8206

1936

State Leaders		1	1	1	1	1	1	1	1	1	9
BRC Leaders		4	6	3	4	-	-	9	-	3	29
Supervisors, Technical Foremen and Checkers	E.C.W.	29	13	4	8	4	12	94	-	81	245
	Fed. WPA	15	18	11	5	-	2	18	1	15	85
	State WPA	-	-	-	-	-	5	-	-	-	5
	S.C.S.	-	-	-	-	-	-	-	-	6	6
	Total	44	31	15	13	4	19	112	1	102	341
	Regular	18	291	-	-	-	-	14	-	41	364
Crew Men (Includes crew fore- men, scouts, strawbosses, and laborers)	E.C.W.	420	151	84	134	92	115	1280	-	925	3201
	Fed. WPA	722	878	624	322	64	92	1160	10	620	4492
	State WPA	-	-	-	-	-	60	-	-	-	60
	A.R.A.	-	-	-	-	25	9	71	-	32	137
	S.C.S.	-	-	-	-	-	-	-	18*	71	89
	N.Y.A.	-	-	-	-	-	-	-	-	6	6
	Total	1160	1320	708	456	181	276	2525	28	1695	8349
Total		1209	1358	727	474	186	296	2647	30	1801	8728

*Includes two state men.

Actually the number of men engaged on blister rust control work was greater than the number indicated, since the figures for the E.C.W. enlisted personnel were based on the average number of men employed. During 1935 and 1936, a total of 1,223 individual owners paid for control work on their properties or provided necessary labor. Several hundred other persons permitted the destruction of their cultivated bushes without compensation and hundreds of others gave general support to the control program.

Table 79 - SUMMARY OF RIBES ERADICATION WORK CONDUCTED UNDER ALL PROGRAMS
IN NORTHEASTERN STATES DURING 1935

(Excludes nursery sanitation and special black currant elimination projects)

Program	Regular Cooperative Program	E.C.W.	P.W.A.	W.P.A.	F.E.R.A. & T.E.R.A.	Totals
Total	56,440	333,431	19,644	263,758	11,012	684,285
Acres	83,966	175,898	20,262	156,885	3,902	440,913
Worked	140,406	509,329	39,906	420,643	14,914	1,125,198
Acres	32,255	152,897	9,326	127,897	3,629	326,004
Pine	45,077	66,484	7,580	70,900	1,068	191,109
Protected	77,332	219,381	16,906	198,797	4,697	517,113
Wild Ribes pulled	1,573,170	13,946,415	1,113,669	12,005,726	189,829	28,828,809
Cult. Ribes pulled	2,536	27,848	821	22,984	1,423	55,612
Total man days	10,368	220,661	6,339	113,096	5,232	355,696
Individuals	2,436.06	-	-	251.60	-	2,687.66
Towns	15,954.45	-	-	3,979.32	60.00	19,993.77
Counties	425.60	-	-	-	-	425.60
State	20,971.63	14,039.83	3,501.71	14,154.70	1,553.76	54,221.63
E.C.W.	-	336,492.49	-	-	-	336,492.49
W.P.A.	-	-	-	393,407.13	-	393,407.13
P.W.A.	-	-	25,069.31	-	-	25,069.31
E.R.A.	-	-	-	-	20,232.58	20,232.58
Total	39,787.74	350,532.32	28,571.02	411,792.75	21,846.34	852,530.17
Cost	.283	.688	.716	.979	1.46	.758
Ribes	11.2	27.4	27.9	28.5	12.7	25.6
Man Days	.07	.43	.16	.27	.35	.32

Table 80 - SUMMARY OF RIBES ERADICATION WORK CONDUCTED UNDER ALL PROGRAMS
IN NORTHEASTERN STATES DURING 1936

(Excludes nursery sanitation and special black currant elimination projects)

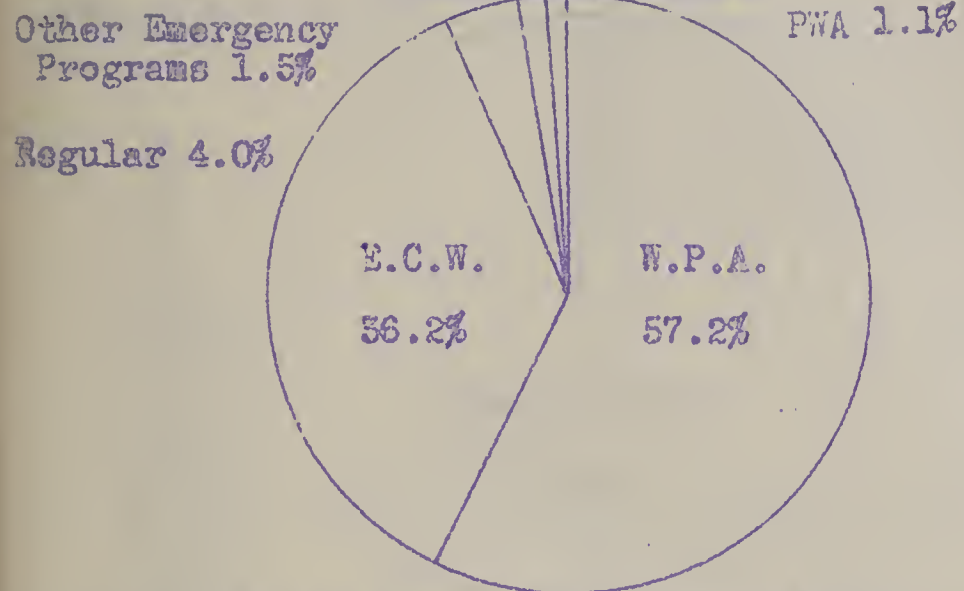
Program	Regular Cooperative Program	E.C.W.	Federal W.P.A.	State W.P.A.	A.R.A.	S.C.S.	N.Y.A.	Totals
Total	12,787	293,825	727,485	1989	7759	4112	348	1,048,305
Areago	22,212	261,003	450,011	-	2633	214	-	736,073
Worked	34,999	554,828	1,177,496	1989	10,392	4326	348	1,784,378
Areago	6,707	144,146	340,869	215	2,683	143	66	494,829
Re-Erad.	12,953	120,079	207,961	-	850	26	-	341,869
Protected	19,660	264,225	548,830	215	3,533	169	66	836,698
Wild Ribes pulled	926,695	13,991,573	40,588,818	1396	86,240	69,983	4242	55,668,747
Cult. Ribes pulled	689	26,963	45,980	97	42	155	-	73,926
Total man days	4,519	225,598	291,330	465	3,536	2,042	84	527,574
Indiv.	107.60	-	631.20	346.00	-	-	-	1,084.80
Towns	7,895.01	-	12,777.67	-	-	-	-	20,672.68
Counties	-	-	987.00	-	-	-	-	987.00
State	6,172.03	7,768.06	27,250.68	32.35	-	-	100.00	41,323.12
E.C.W.	-	374,691.32	-	-	-	-	-	374,691.32
W.P.A.	-	-	1,062,946.42	1,838.98	-	-	-	1,064,785.40
A.R.A.	-	-	-	-	12,411.98	-	-	12,411.98
S.C.S.	-	-	-	-	-	3,165.38	-	3,165.38
N.Y.A.	-	-	-	-	-	-	220.80	220.80
Total	14,174.64	382,459.38	1,104,592.97	2,217.33	12,411.98	3,165.38	320.80	1,519,342.48
Cost	.405	.689	.938	1.11	1.19	.732	.634	.851
Ribes	26.5	25.2	34.5	0.7	8.3	16.2	12.2	31.2
Man Days	.13	.41	.25	.23	.34	.47	.24	.30

RIBES ERADICATION PERFORMED UNDER EACH PROGRAM IN THE
NORTHEASTERN STATES DURING 1955 AND 1956

(Excludes Nursery Sanitation and Cultivated Black Current Elimination)

Percentage of Total Acreage
Cleared of Ribes

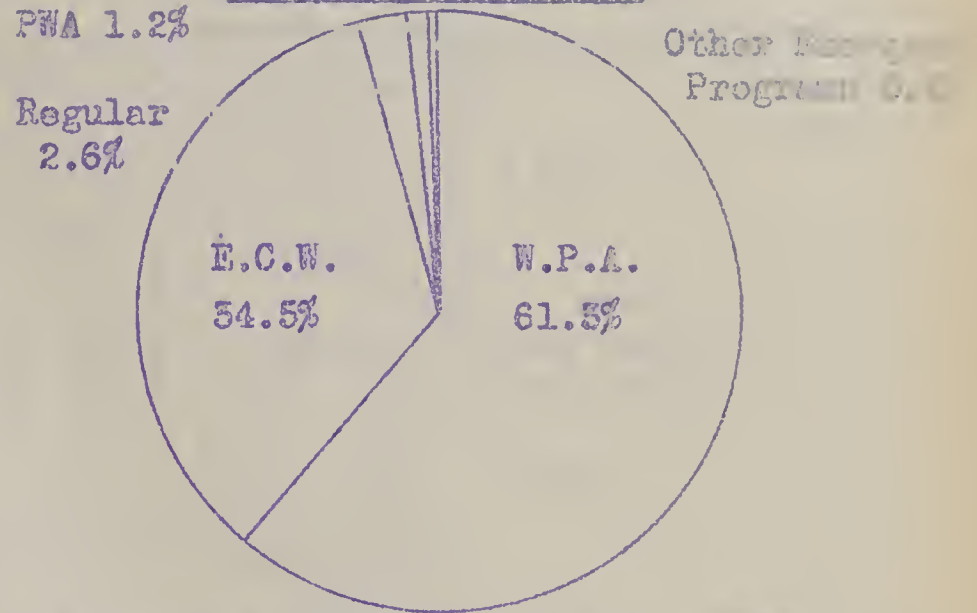
Initial Eradication



Total Acreage Worked - 1,732,590

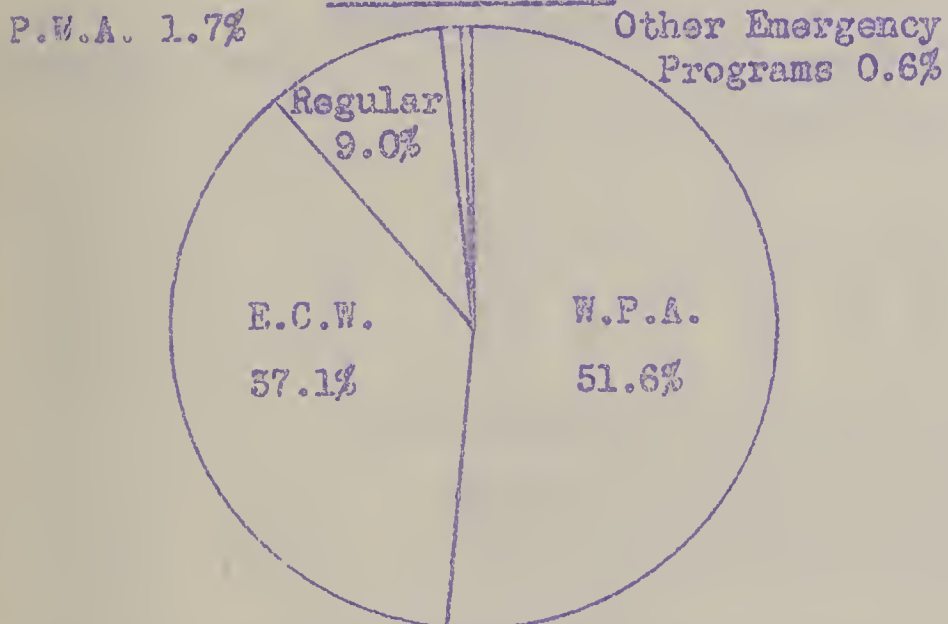
Percentage of Total
Wild Ribes Destroyed

Initial Eradication



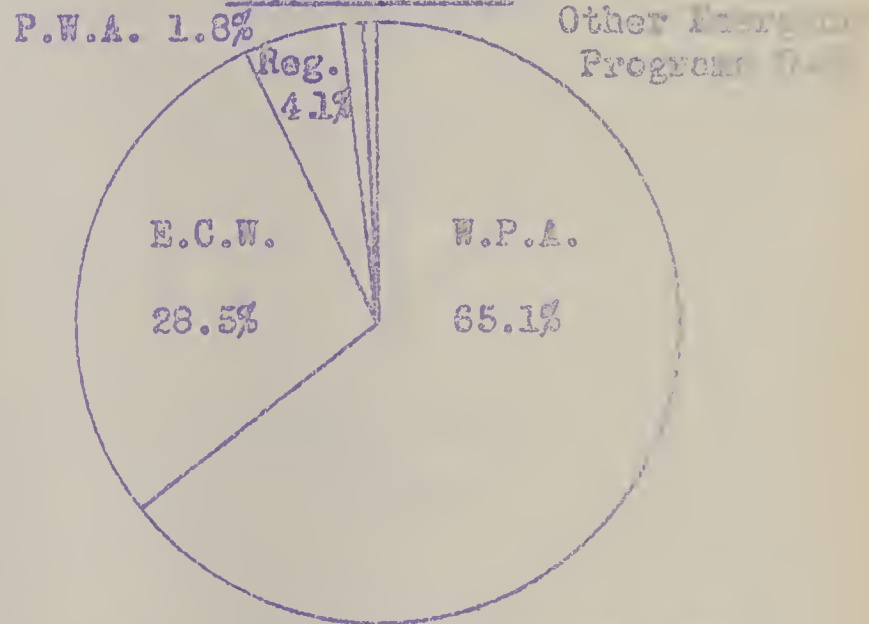
Total Number of Ribes - 64,184,680

Reeradication



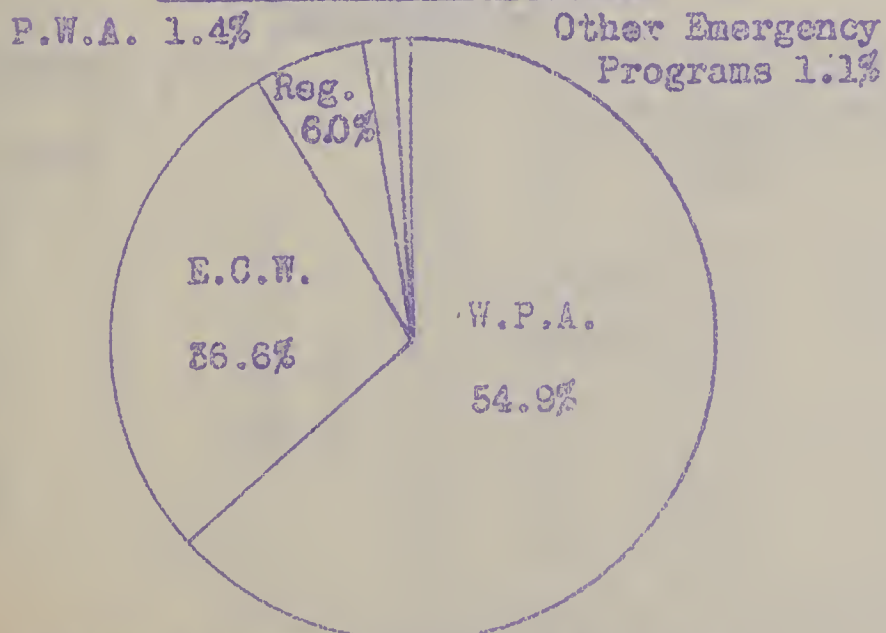
Total Acreage Worked - 1,176,986

Reeradication



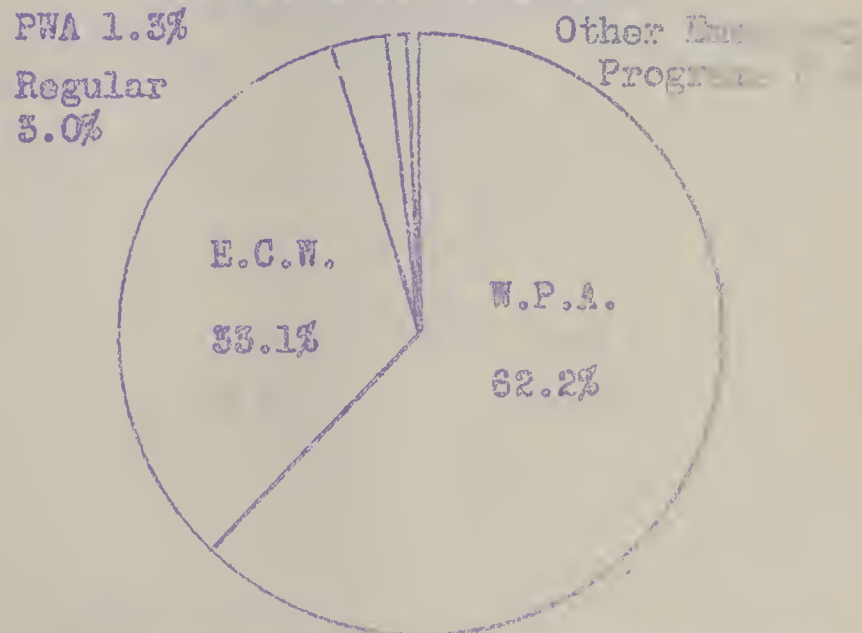
Total Number of Ribes - 20,312,076

Initial & Reeradication



Total Acreage Worked - 2,909,576

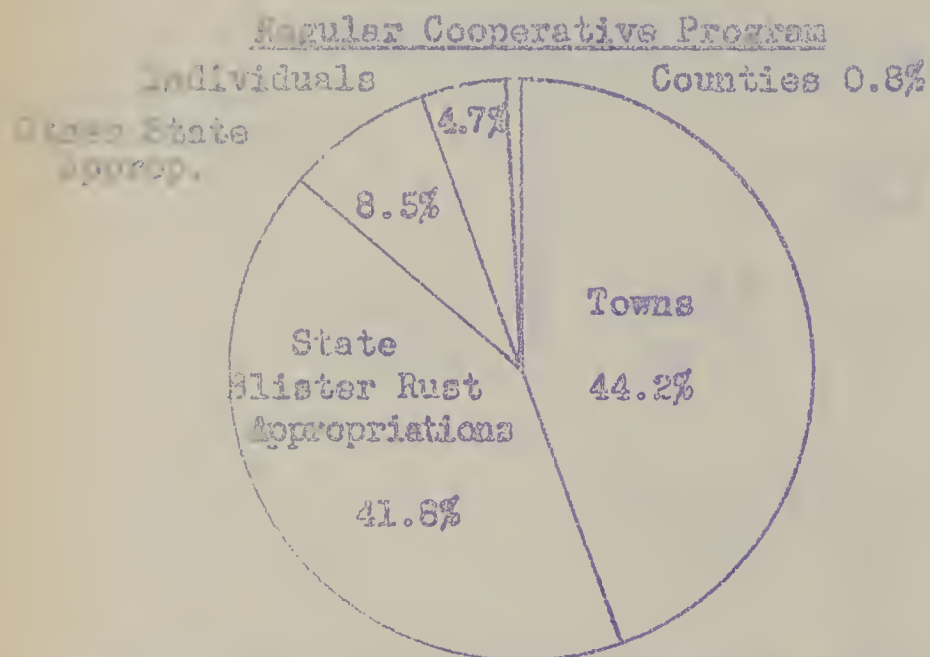
Initial & Reeradication



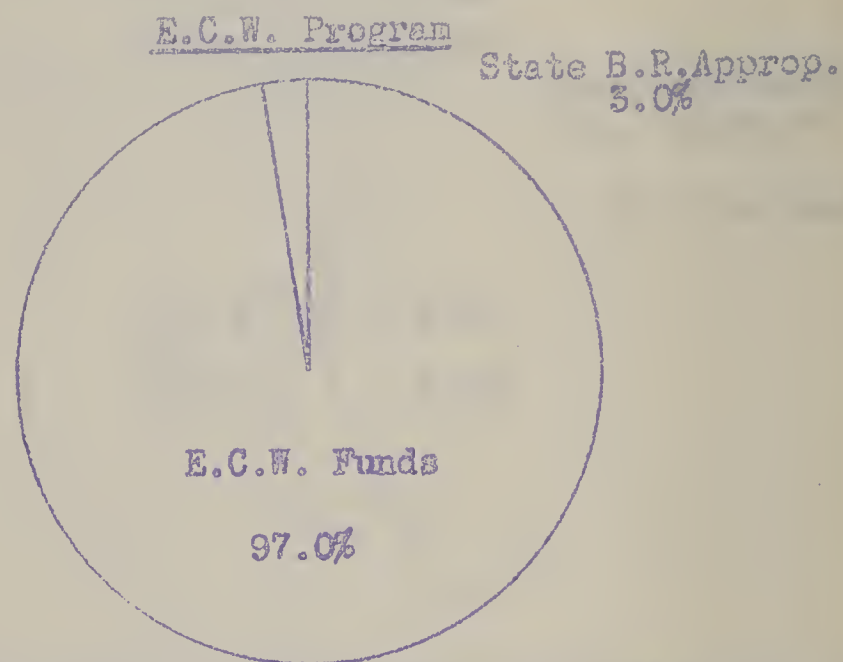
Total Number of Ribes - 24,471,200

SOURCE OF TOTAL FUNDS USED IN RIBES ERADICATION
UNDER EACH PROGRAM IN NORTHEASTERN STATES DURING 1945 AND 1946

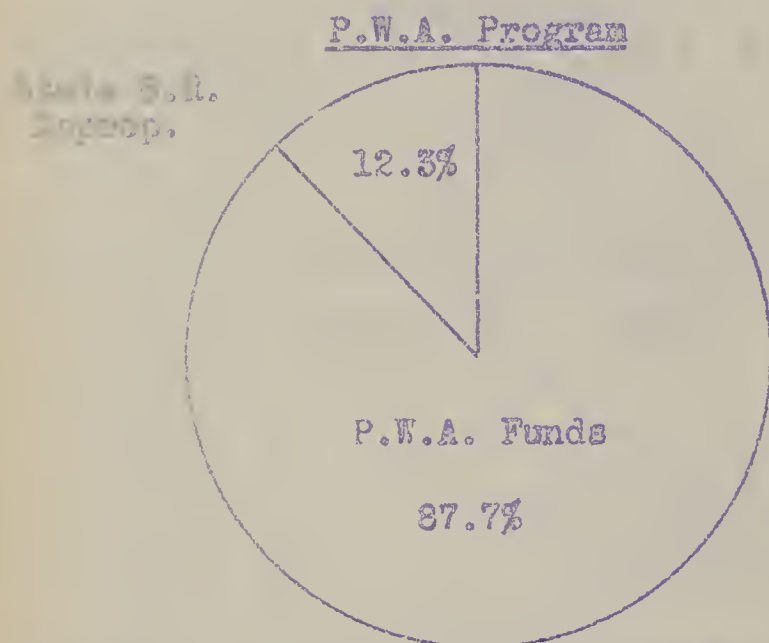
(Includes Nursery Sanitation and Cultivated Black Current Elimination)



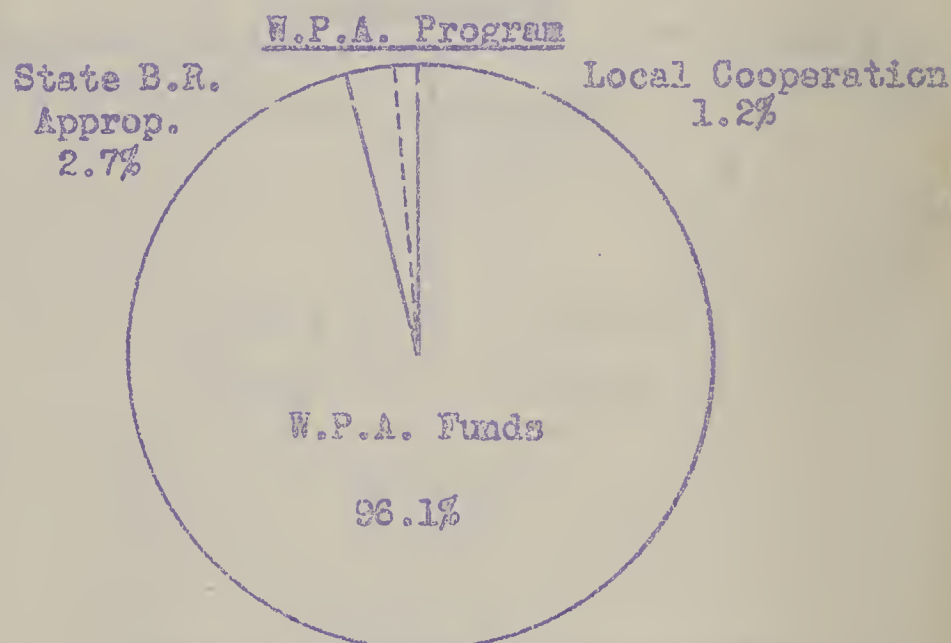
Total Cost of Ribes Eradication - \$53,962.38



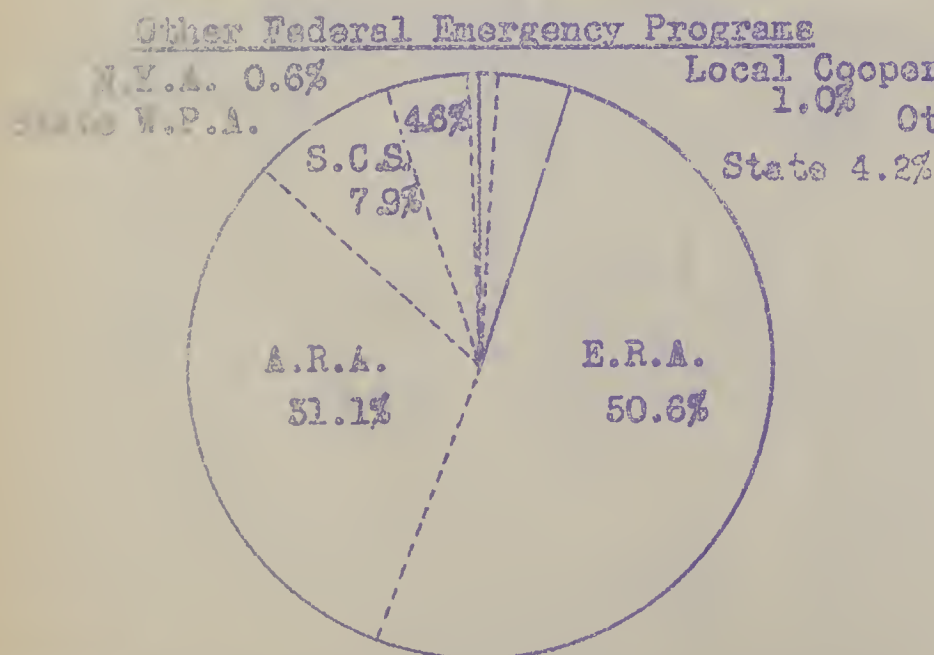
Total Cost of Ribes Eradication - \$732,991.70



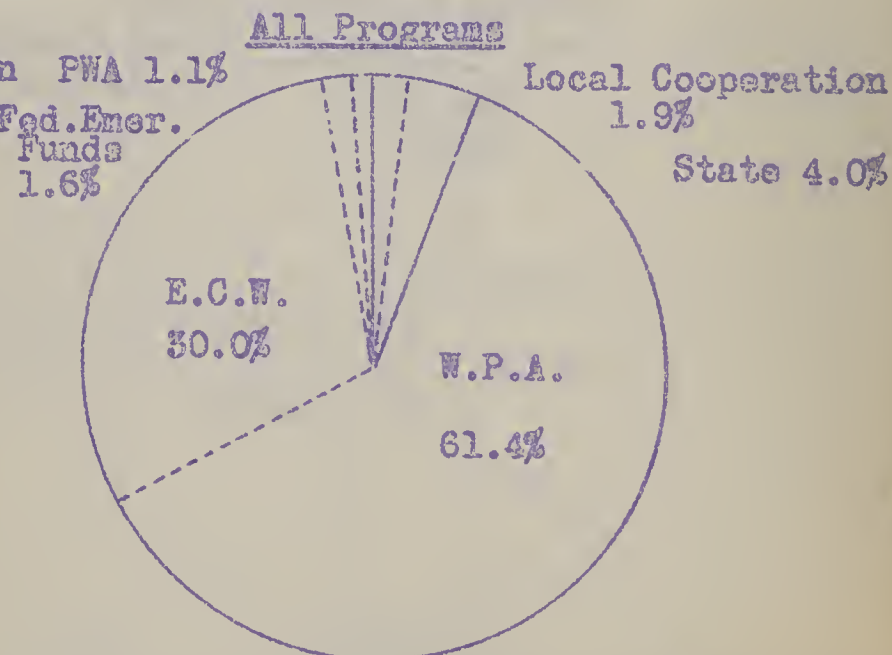
Total Cost of Ribes Eradication - \$28,571.02



Total Cost of Ribes Eradication - \$1,516,385.72



Total Cost of Ribes Eradication - \$39,961.83



Total Cost of Ribes Eradication - \$2,371,872.65

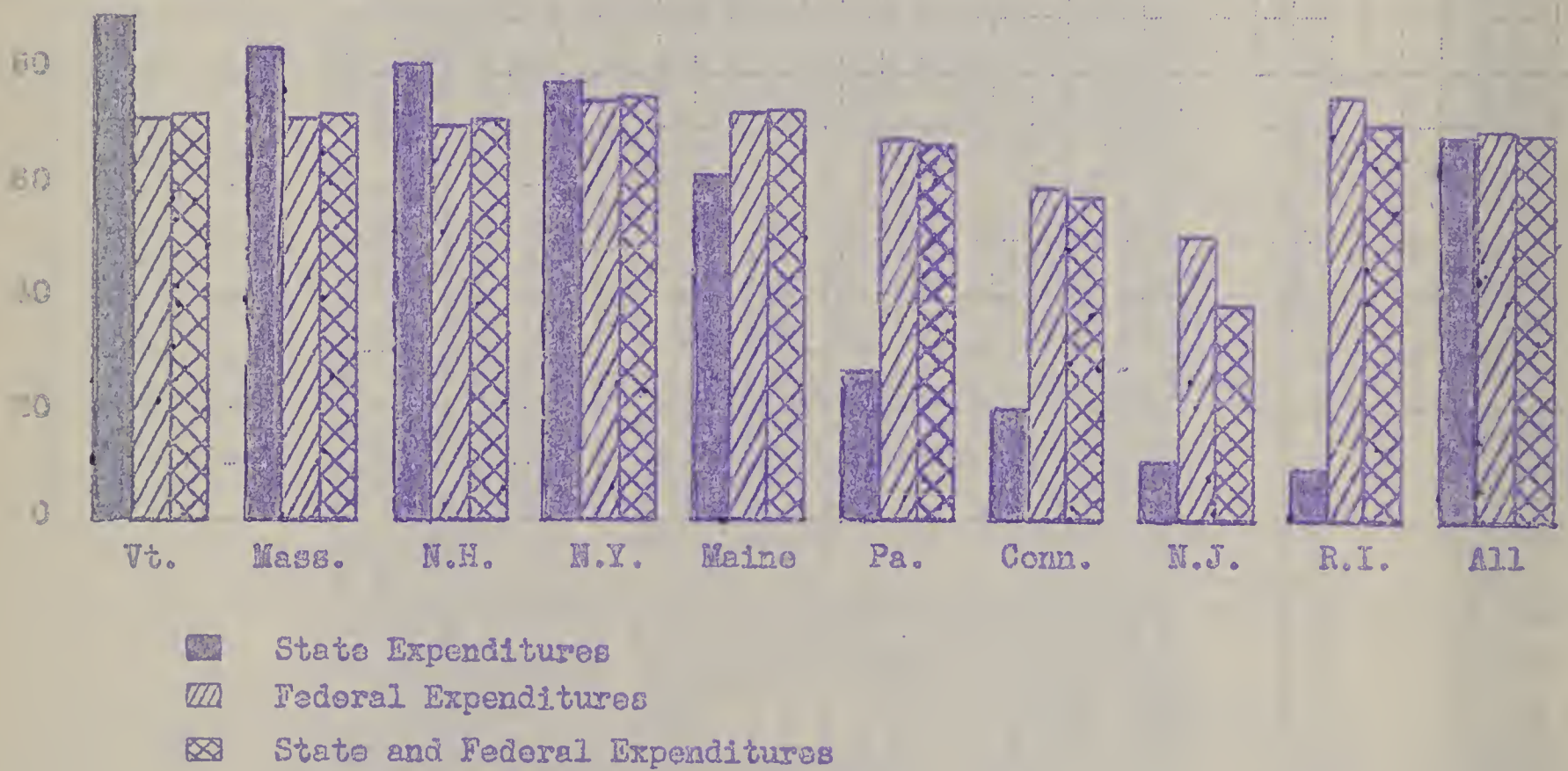
Table 81a - Classification of Blister Rust-Control Funds Used on Project "Ribes Eradication"
Under All Programs in Northeastern States During 1935 and 1936
(Excludes nursery sanitation and special black currant elimination projects)

State	State Funds				Federal Funds							
	Yr.	Indiv.	Towns & Counties	State	Total	E.C.W.	P.W.A.	W.P.A.	E.R.A.	A.R.A.	S.C.S.	N.Y.A.
Total												
Mo.	35	155.40	5514.47	3172.45	8842.32	47,597.35	5706.07	80,765.14	-	-	-	-
	36	-	864.47	-	864.47	54,329.53	-	178,648.09	-	-	-	-
N.H.	35	454.49	11072.80	3451.59	14978.88	18,520.68	7212.92	60,440.47	-	-	-	-
	36	107.60	8326.86	2283.93	10718.39	20,584.06	-	175,273.84	-	-	-	-
	35	-	993.00	280.84	1273.84	11,033.40	1786.32	25,665.40	-	-	-	-
Vt.	36	-	8718.75	-	8718.75	9,606.16	-	111,262.03	-	-	-	-
Mass.	35	1146.80	2353.50	2445.72	5946.02	13,874.75	3052.95	37,768.44	10998.20	-	-	-
	36	631.20	3573.60	1945.22	6150.02	8,951.80	-	81,289.47	-	-	-	-
R.I.	35	-	-	337.99	337.99	26,687.64	1568.75	7,394.63	-	-	-	-
	36	-	-	85.48	85.48	16,155.29	-	16,031.94	-	-	-	-
Conn.	35	-	60.00	843.90	903.90	29,582.31	1287.49	17,665.91	7793.05	-	-	-
	36	346.00	176.00	97.88	619.88	17,574.85	-	27,704.44	(3)	-	-	-
N.Y.	35	930.97	425,602	2534.84	43891.41	91,899.59	1786.00	118,658.78	1441.33	-	-	-
	36	-	-	34032.03	34082.03	153,601.68	-	327,695.51	-	-	-	-
N.J.	35	-	-	-	-	-	227.00	1,869.33	-	-	-	-
	36	-	-	298.10	298.10	-	-	1,992.97	-	-	-	-
Pa.	35	-	-	1154.30	1154.30	97,296.77	2441.81	43,159.03	-	-	-	-
	36	-	-	2530.48	2530.48	94,087.95	-	144,887.11	-	-	-	-
Total	35	2687.66	20419.37	54221.63	77328.66	336,492.49	25069.31	393,407.13	20232.58	-	-	-
	36	1084.80	21659.68	41323.12	64067.60	374,691.32	-	1,064,785.40	-	-	-	-
										15,798.16	1,455,274.88	1,519,342.43

(1) Includes \$987.00 county funds. (2) County money. (3) Includes \$1,838.98 state W.P.A. funds.
(4) A.R.A. funds. (5) Includes \$3,076.59 A.R.A. money, \$3,165.38 S.C.S. funds, and \$220.80 N.Y.A. expenditure.

PERCENTAGE OF TOTAL EXPENDITURES IN THE VARIOUS NORTHEASTERN STATES
FOR RIBES ERADICATION WORK DURING 1935 AND 1936

100 Percent



Note: Includes regular Ribes eradication, special black currant elimination and nursery sanitation.

Table 81 - Summary of Nursery Sanitation Work Conducted Under All Programs
In Northeastern States During 1935 and 1936.

1935

Site	Type of Erad.	No. Nurseries Worked	Acreage Examined	Ribes Pulled		Total Man Days	Cost				Per Acre		
				Wild	Cult.		Indiv.	State	P.W.A.	E.C.W.	Total	Cost	Ribes Pulled
I.	Re-Erad.	1	700	1,542	-	66	-	212.47	-	-	212.47	.304	2.2
II.	Re-Erad.	6	2,543	182	58	56	-	304.56	-	-	304.56	.120	0.07
III.	Re-Erad.	11	3,685	815	1	85	-	117.65	186.55	57.79	361.99	.098	0.2
IV.	Re-Erad.	6	10,330	20,938	120	565	-	1,041.44	526.75	255.50	1,823.69	.177	2.0
V.	Re-Erad.	1	10	50	-	1	-	3.00	3.33	-	6.33	.633	5.0
ma.	Initial	1	148	1,608	320	27	46.90	-	-	-	46.90	.317	10.9
	Re-Erad.	5	1,221	6,986	-	496	34.75	308.15	-	536.64	879.54	.720	5.7
	Total	6	1,369	8,594	320	523	81.65	308.15	-	536.64	926.44	.677	6.3
totals	Initial	1	148	1,608	320	27	46.90	-	-	-	46.90	.317	10.9
	Re-Erad.	30	18,489	30,513	179	1,269	34.75	1,987.27	716.63	849.93	3,588.58	.194	1.7
	Total	31	18,637	32,121	499	1,296	81.65	1,987.27	716.63	849.93	3,635.48	.195	1.7

1936

Type of Erad.	No. Nurseries Worked	Acreage Examined	Ribes Pulled		Total Man Days	Cost					Per Acre			
			Wild	Cult.		Indiv.	State	E.C.W.	W.P.A.	S.C.S.	Total	Cost	Ribes	
vine	Re-Erad.	1	247	7	-	43	-	-	68.83	-	-	68.83	.279	0.7
H.	Re-Erad.	1	176	108	-	119	-	-	-	399.00	-	399.00	2.27	0.6
ss.	Re-Erad.	1	380	257	75	75	-	24.00	-	218.27	-	242.27	.638	0.7
ss.	Re-Erad.	2	487	1,574	-	247	-	438.48	-	822.90	-	1,261.38	2.59	3.2
I.	Re-Erad.	5	2,453	21	10	35	-	-	102.29	-	-	102.29	.042	0.7
nn.	Re-Erad.	11	3,766	786	39	220	-	427.11	178.80	159.35	-	765.26	.203	0.7
Y.	Re-Erad.	4	4,620	4,010	-	282	-	141.60	-	1,093.25	-	1,234.85	.267	0.9
J.	Initial	1	195	1,538	65	102	-	77.25	-	-	228.00	305.25	1.57	7.9
ma.	Re-Erad.	6	1,475	6,525	31	479	63.00	770.87	246.00	238.02	-	1,317.89	.893	4.7
	Initial	1	195	1,538	65	102	-	77.25	-	-	228.00	305.25	1.57	7.9
hals	Re-Erad.	31	13,604	13,288	155	1500	63.00	1,802.06	595.92	2,930.79	-	5,391.77	.396	1.0
Total	Total	32	13,799	14,826	220	1602	63.00	1,879.31	595.92	2,930.79	228.00	5,697.02	.415	1.2

Table 82 - Special Ribes Nigrum Elimination Work Conducted
Under All Programs in Northeastern States

1935 and 1936

State	Year	No. Towns		No. Properties Inspected	No. Patches Located	No. Ribes Pulled		Total Man Days	Cost				
		Worked	Completed			Nigrum Cult.	Other Cult.		Local Coop.	State	W.P.A.	E.R.A.	Total
Mass.	1935	15	14	39,892	378	2,924	-	268	447.40	371.44	1,157.00	-	1,975.84
	1936	2	1	21,207	185	74	-	96	7.40	-	555.75	-	563.15
Conn.	1935	68	65	168,715	12,676	4,701	1,198	6607	60.00	93.13	-	35,330.30	35,483.43
	1936	-	-	-	-	-	-	-	-	-	-	-	-
N.Y.	1935	25	25	13,970	194	1,520	-	138	-	797.94	-	-	797.94
	1936	2	2	1,420	43	229	-	14	-	59.88	-	-	59.88
Totals	1935	108	104	222,577	13,248	9,145	1,198	7013	507.40	1262.51	1,157.00	35,330.30	58,257.21
	1936	4	3	22,627	228	303	-	110	7.40	59.88	555.75	-	623.03

Basis of Costs: Includes cost of laborers, scouts, and foremen while engaged in locating and destroying Ribes nigrum and other cultivated bushes as indicated.

Table 83 -Blister Rust Canker Elimination Work Under All Programs
In Northeastern States During 1935 and 1936.

State	Year	Est. No. Pines Examined	No. Fatally Inf. Pines Cut Down	No. Pines Treated For Infection	No. Cankers Removed		Total Man Days	Cost		
					Branch	Stem		E.C.W.	W.P.A.	Total
Maine*	1935	3,000	325	1,737	7,802	671	352	552.30	-	552.30
	1936	16,100	1,341	3,192	8,983	1436	1,000	1,500.00	-	1,500.00
	Total	19,100	1,666	4,929	16,785	2107	1,352	2,052.30	-	2,052.30
Vt.	1935	16,900	558	1,124	1,176	23	186	-	578.85	578.85
	1936	14,600	686	1,347	1,364	19	297	-	959.95	959.95
	Total	31,500	1,244	2,471	2,540	42	483	-	1,538.80	1,538.80
N.Y.	1935	197,323	30,087	24,685	30,912	-	2,264	-	9,005.94	9,005.94
	1936	151,885	39,983	25,600	31,054	-	2,179	-	8,544.20	8,544.20
	Total	349,208	70,070	50,285	61,966	-	4,443	-	17,550.14	17,550.14
Penn.	1935	207,848	15,435	40,731	180,788	-	1,892	3,307.02	-	3,307.02
	1936	210,102	9,141	24,374	94,774	-	1,529	2,887.31	-	2,887.31
	Total	417,950	24,576	65,105	275,562	-	3,421	6,194.33	-	6,194.33
All States	1935	425,071	46,405	68,277	220,678	694	4,694	3,859.32	9,584.79	13,444.11
	1936	392,687	51,151	54,513	136,175	1455	5,005	4,387.31	9,504.16	13,891.47
	Total	817,758	97,556	122,790	356,853	2149	9,699	8,246.63	19,088.94	27,335.57

*Acadia National Park

Table 84 - State Compensation Paid For Cultivated Ribes Destroyed
Under All Programs In Northeastern States

1935 and 1936

State	Year	Total No. Cultivated Ribes Destroyed	No. Bushes Paid For	% Bushes Paid For	No. Persons Paid Compensation	Amount Paid in Reimburse- ment	Ave. Amount Paid Per Bush
Maine	1935	3,390	-	-	-	-	-
	1936	13,221	-	-	-	-	-
N.H.	1935	524	-	-	-	-	-
	1936	5,745	-	-	-	-	-
Vt.	1935	320	45	14.1	4	22.50	.500
	1936	2,460	7	0.3	1	3.50	.500
Mass.	1935	20,185	416	2.1	5	184.25	.443
	1936	3,992	453	11.3	5	225.60	.498
R.I.	1935	3,525	-	-	-	-	-
	1936	4,774	-	-	-	-	-
Conn.	1935	12,682	-	-	-	-	-
	1936	3,833	-	-	-	-	-
N.Y.	1935	15,490	350	2.3	60	170.60	.487
	1936	26,486	490	1.9	17	204.40	.417
N.J.	1935	351	-	-	-	-	-
	1936	264	-	-	-	-	-
Penn.	1935	9,987	-	-	-	-	-
	1936	13,694	335	2.4	53	151.00	.451
Totals	1935	66,454	811	1.2	69	377.35	.455
	1936	74,449	1,285	1.7	76	584.50	.455

The Pennsylvania data represents payments made by three individual cooperators (nurserymen) during 1936.

No federal money has been paid for Ribes compensation.

Table 85 - Total State Expenditures, By Cooperating Agencies, For Blister Rust Control Work In Northeastern States During Calendar Years 1935 and 1936.

State	Year	State B. R. Appropriations	Other State Appropriation Funds	Town Funds	Individual Funds or Labor	County Funds	Total
Maine	1935	5,968.11	500.00	5,514.47	155.40	-	12,137.98
	1936	3,926.50	500.00	864.47	-	-	5,290.97
N.H.	1935	6,154.32	-	11,072.80	454.49	-	17,681.61
	1936	5,782.63	-	7,339.86	107.60	987.00	14,217.09
Vt.	1935	1,269.39	-	993.00	-	-	2,262.39
	1936	627.50	-	8,718.75	-	-	9,346.25
Mass.	1935	3,005.53	439.15	2,498.10	1,594.20	-	7,536.98
	1936	2,802.75	801.88	4,374.60	638.60	-	8,617.83
R.I.	1935	5,040.93	-	-	-	-	5,040.93
	1936	3,117.95	-	-	-	-	3,117.95
Conn.	1935	3,591.16	-	120.00	-	-	3,711.16
	1936	6,461.79	-	726.00	346.00	-	7,533.79
N.Y.	1935	52,050.21	4,607.60	-	972.57	425.60	58,055.98
	1936	43,696.41	777.60	-	-	-	44,474.01
N.J.	1935	1,886.34	-	-	-	-	1,886.34
	1936	1,850.26	-	-	-	-	1,850.26
Penn.	1935	8,272.17	-	-	81.65	-	8,353.82
	1936	9,574.34	-	-	214.00	-	9,788.34
Totals	1935	87,238.16	5,546.75	20,198.37	3,258.31	425.60	116,667.19
	1936	77,840.13	2,079.48	22,023.68	1,306.20	987.00	104,236.49
% of Total	1935	74.8	4.7	17.3	2.8	0.4	100.0
	1936	75.0	2.0	20.8	1.3	0.9	100.0

Table 86 - Total State Expenditures During The Calendar Years 1935 and 1936 For The Various Blister Rust Control Projects in The Respective Northeastern States.

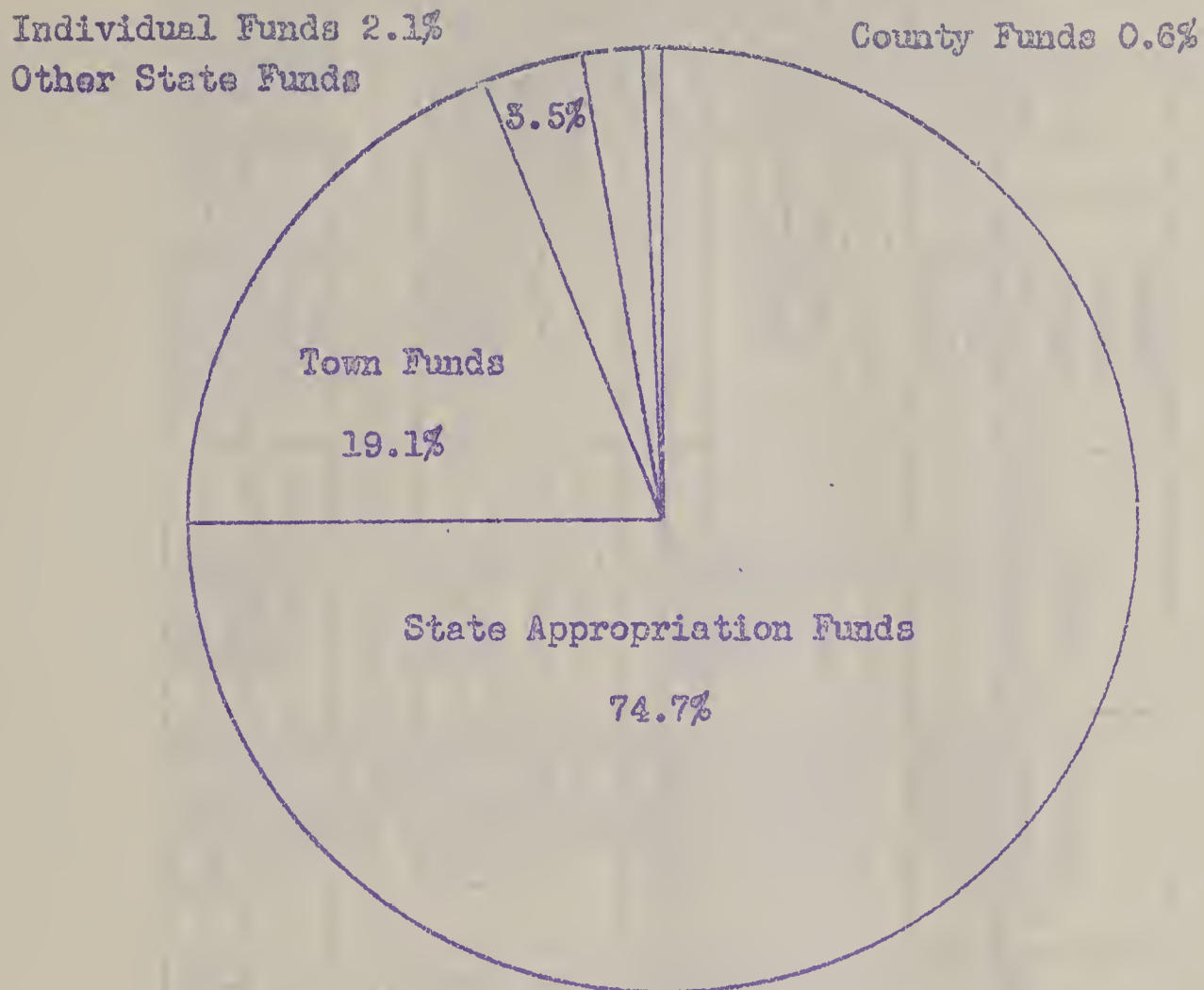
State	Year	Supervision and BRC Agent Activities	Ribes Eradication	Erad.Assistants and Checkers	Black Currant Elimination	Nursery Sanitation	Ribes Compensation	Blister Rust Canker Elimination	Field Data	Totals
Maine	1935	1,568.74	8,842.32	362.00	-	500.00	-	-	864.92	12,137.98
	1936	2,285.11	864.47	128.00	-	500.00	-	-	1,513.39	5,290.97
N. H.	1935	1,458.73	14,978.88	-	-	-	-	-	1,244.00	17,681.61
	1936	1,724.88	10,718.39	1,755.50	-	-	-	-	18.32	14,217.0
Vt.	1935	633.52	1,273.84	120.06	-	212.47	22.50	-	-	2,262.33
	1936	600.00	8,718.75	-	-	24.00	3.50	-	-	9,346.25
Mass.	1935	439.16	5,946.02	4.12	818.84	-	184.25	-	144.60	7,536.93
	1936	407.16	6,150.02	-	7.40	438.48	225.60	-	1,389.17	8,617.81
R. I.	1935	4,124.33	337.99	20.00	-	304.56	-	-	254.05	5,040.93
	1936	2,466.27	85.48	-	-	-	-	-	566.20	3,117.95
Conn.	1935	2,065.76	903.90	-	153.13	117.65	-	-	470.72	3,711.10
	1936	2,973.88	619.88	1,338.42	-	427.11	-	-	2,174.50	7,535.79
N. Y.	1935	161.38	43,891.41	462.24	797.94	1,041.44	170.60	-	11,530.97	58,055.93
	1936	152.00	34,082.03	3,986.52	59.88	141.60	204.40	-	5,847.58	44,474.01
N. J.	1935	1,828.26	-	55.08	-	3.00	-	-	-	1,886.34
	1936	1,474.91	298.10	-	-	77.25	-	-	-	1,850.26
Penna.	1935	6,390.25	1,154.30	419.47	-	389.80	-	-	-	8,353.82
	1936	5,973.44	2,530.48	299.55	-	833.87	151.00	-	-	9,788.3
Totals	1935	18,670.12	77,328.66	1,442.97	1,769.91	2,568.92	377.35	-	14,509.26	116,667.19
	1936	18,057.65	64,067.60	7,507.99	67.28	2,442.31	584.50	-	11,509.16	104,236.49

**Table 87 - Total State and Federal Expenditures For Blister Rust Control
In Northeastern States During Calendar Years 1935 and 1936**

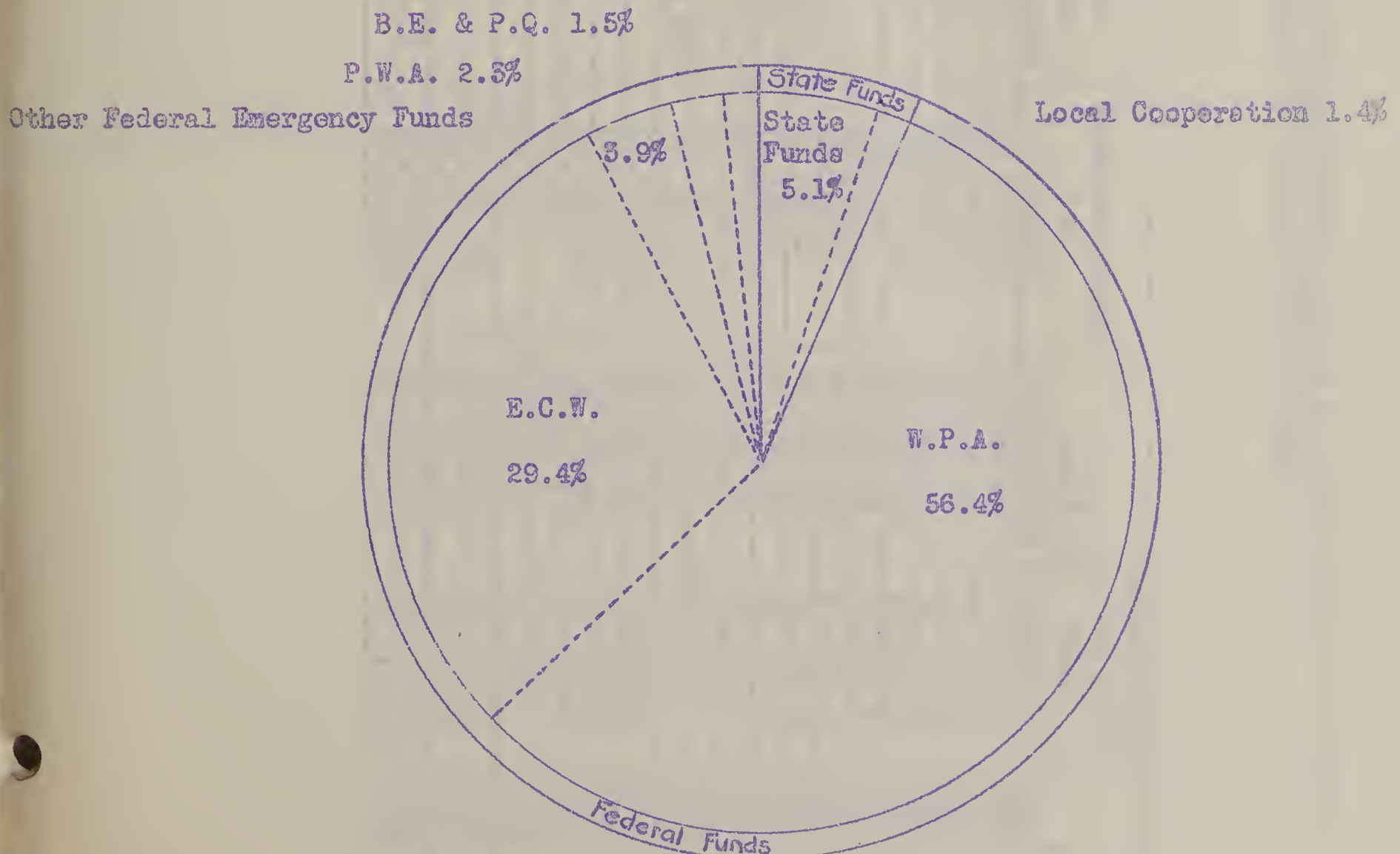
State	Year	Total State Expenditures	Federal Expenditures						S.C.S. & N.Y.A.		Total	Total State and Federal Expenditures
			B.E. and P.O.	P.W.A.	E.C.W.	W.P.A.	E.R.A.	A.R.A.				
Maine	1935	12,137.98	2,804.75	12,195.31	71,053.78	100,930.92	-	-	-	-	186,984.76	199,122.74
	1936	5,290.97	5,687.17	-	71,116.77	238,003.98	-	-	-	-	314,807.92	320,098.89
N. H.	1935	17,681.61	3,112.08	16,955.20	24,989.41	83,445.86	-	-	-	-	128,502.55	146,184.16
	1936	14,217.09	5,516.52	-	29,734.87	239,122.09	-	-	-	-	274,373.48	288,590.57
Vt.	1935	2,262.39	1,095.41	2,865.19	13,567.06	39,085.45	-	-	-	-	56,613.11	58,875.50
	1936	9,346.25	3,178.94	-	11,431.03	152,714.81	-	-	-	-	167,324.78	176,671.03
Mass.	1935	7,536.98	3,267.48	12,996.26	17,114.66	51,689.17	10,998.20	-	-	-	96,065.77	103,602.75
	1936	8,617.83	5,703.18	-	10,062.85	112,266.33	-	-	-	-	128,032.36	136,650.19
R. I.	1935	5,040.93	127.78	2,014.60	38,082.23	8,108.70	-	-	-	-	48,333.31	53,374.24
	1936	3,117.95	749.97	-	23,253.70	18,343.98	-	1,640.00	-	-	43,987.65	47,105.60
Conn.	1935	3,711.16	1,983.29	3,800.34	39,755.73	20,593.25	63,553.15	-	-	-	129,685.76	133,396.92
	1936	7,533.79	4,438.77	-	23,306.29	(1)75,760.66	-	424.81	-	-	103,930.53	111,464.32
N. Y.	1935	53,055.98	2,776.71	19,616.55	121,673.26	159,710.35	1,441.33	-	-	-	305,218.20	363,274.18
	1936	44,474.01	2,109.17	-	200,762.99	418,376.19	-	7,270.58	-	-	628,518.93	672,992.91
N. J.	1935	1,886.34	669.76	1,113.73	-	2,406.71	-	-	-	-	4,190.20	6,076.51
	1936	1,850.26	1,519.92	-	-	2,618.06	-	-	-	228.00	4,365.98	6,216.21
Penna.	1935	8,353.82	1,724.11	6,434.96	155,215.45	55,619.88	-	-	-	-	218,994.40	227,348.22
	1936	9,788.34	4,741.53	-	155,812.56	191,393.49	-	3,076.59	4316.18	-	359,340.35	369,128.69
Totals	1935	116,667.19	17,561.37	77,992.14	481,451.58	521,590.29	75,992.68	-	-	-	1,174,588.06	1,291,255.26
	1936	104,236.49	33,645.17	-	525,481.06	1,448,599.59	-	12,411.98	4544.18	-	2,024,681.18	2,128,918.47

(1) Includes \$40,890.72 W.P.A. funds spent under special state project.

PERCENTAGE TOTAL BLISTER RUST CONTROL EXPENDITURES
IN NORTHEASTERN STATES DURING CALENDAR YEARS 1955 AND 1956
PAID BY VARIOUS COOPERATING AGENCIES



Total State Expenditures - \$220,903.68



Total State and Federal Expenditures - \$3,420,173.72

Table 88 - Total State and Federal Expenditures During The Calendar Years 1935 and 1936 For The Various Blister Rust Control Projects in The Northeastern States.

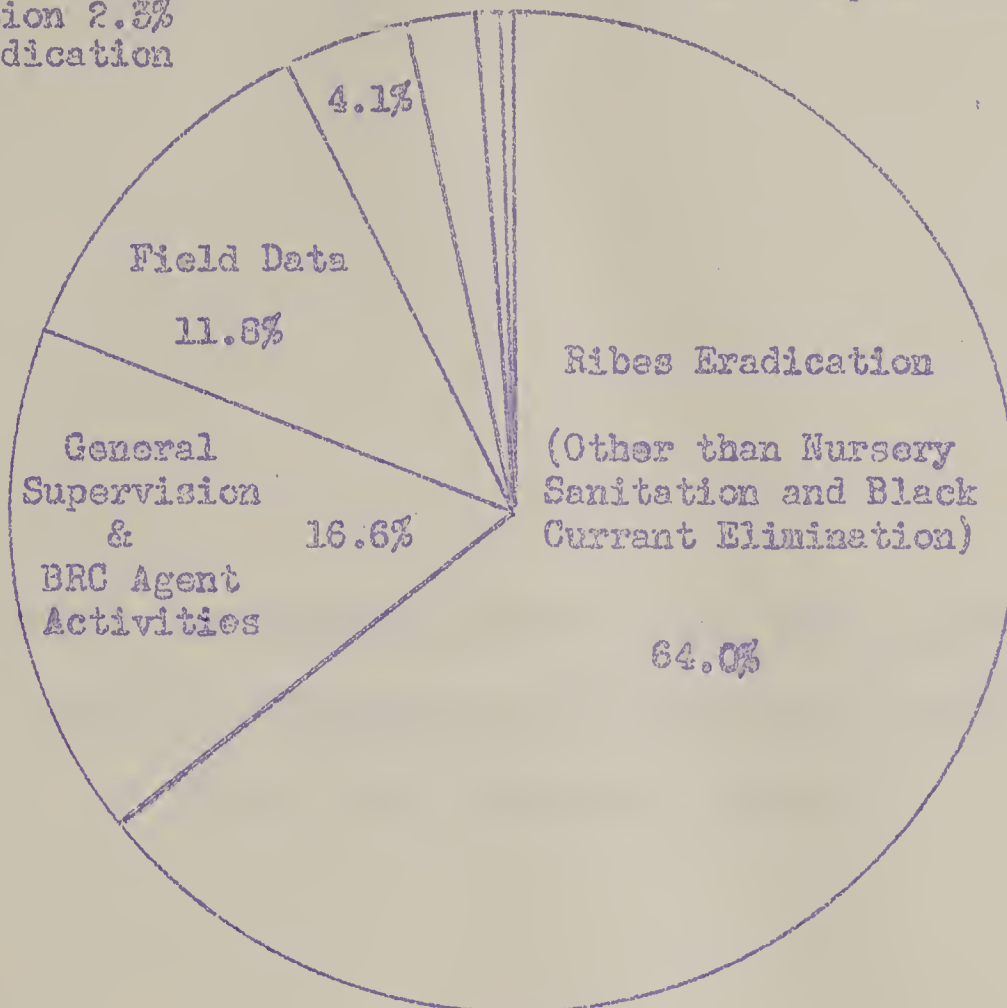
State	Year	Supervision and BRC Agent Activities	Ribes Eradication	Erad. Assistants and Checkers	Black Currant Elimination	Nursery Sanitation	Ribes Compensation	Blister Rust Canker Elimination	Field Data	Total
Ala.	1935	16,483.32	142,930.88	22,531.64	-	500.00	-	552.30	16,124.60	199,122.7
Ala.	1936	23,349.13	233,842.09	30,172.19	-	568.83	-	1,500.00	30,666.65	320,099.6
Ariz.	1935	19,635.33	101,152.95	11,087.18	-	-	-	-	14,308.70	145,181.2
Ariz.	1936	23,529.11	206,376.29	23,563.96	-	399.00	-	-	34,722.21	288,590.1
Cal.	1935	6,691.71	39,758.96	6,214.24	-	212.47	22.50	578.85	5,396.77	53,315.5
Cal.	1936	16,143.83	129,586.94	10,564.00	-	242.27	3.50	959.95	19,170.54	176,671.1
Cal.	1935	18,416.07	71,640.36	5,674.19	1,975.84	-	184.25	-	5,712.04	103,602.1
Cal.	1936	15,668.56	96,391.29	5,861.17	563.15	1,261.38	225.60	-	16,679.04	136,680.0
Cal.	1935	4,811.28	35,989.01	10,117.96	-	304.56	-	-	2,151.43	53,372.7
Cal.	1936	3,772.15	33,912.71	3,367.30	-	102.29	-	-	5,951.15	47,105.1
Cal.	1935	6,195.40	57,232.66	11,081.83	35,483.43	361.99	-	-	23,041.61	133,890.2
Cal.	1936	8,700.66	46,323.98	8,765.11	-	765.26	-	-	46,909.31	111,491.1
Cal.	1935	30,760.82	257,677.11	36,500.76	797.94	1,823.69	170.60	9,005.94	26,537.32	363,274.1
Cal.	1936	32,484.96	522,649.80	66,143.81	59.88	1,234.85	204.40	8,544.20	41,671.04	672,922.2
Cal.	1935	3,183.55	2,096.33	790.33	-	6.33	-	-	-	6,073.1
Cal.	1936	3,063.92	2,291.07	556.00	-	305.25	-	-	-	6,210.2
Cal.	1935	14,604.55	144,051.91	32,725.85	-	926.44	-	3,307.02	31,732.65	227,210.1
Cal.	1936	21,705.65	247,968.31	46,596.48	-	1,317.89	151.00	2,887.31	48,502.05	369,121.5
Totals	1935	120,781.83	852,530.17	136,723.98	38,257.21	4,135.48	377.35	15,444.11	125,006.12	1,291,230.0
Totals	1936	148,417.97	1,519,342.48	195,590.02	623.03	6,197.02	584.50	13,391.46	244,271.99	2,128,915.5

STATE AND FEDERAL EXPENDITURES IN NORTHEASTERN STATES
DURING CALENDAR YEARS 1935 AND 1936

(Percentage of Total Spent on Each Project)

Black Currant Elimination 0.8%
Nursery Sanitation 2.3%
Supervision of Eradication

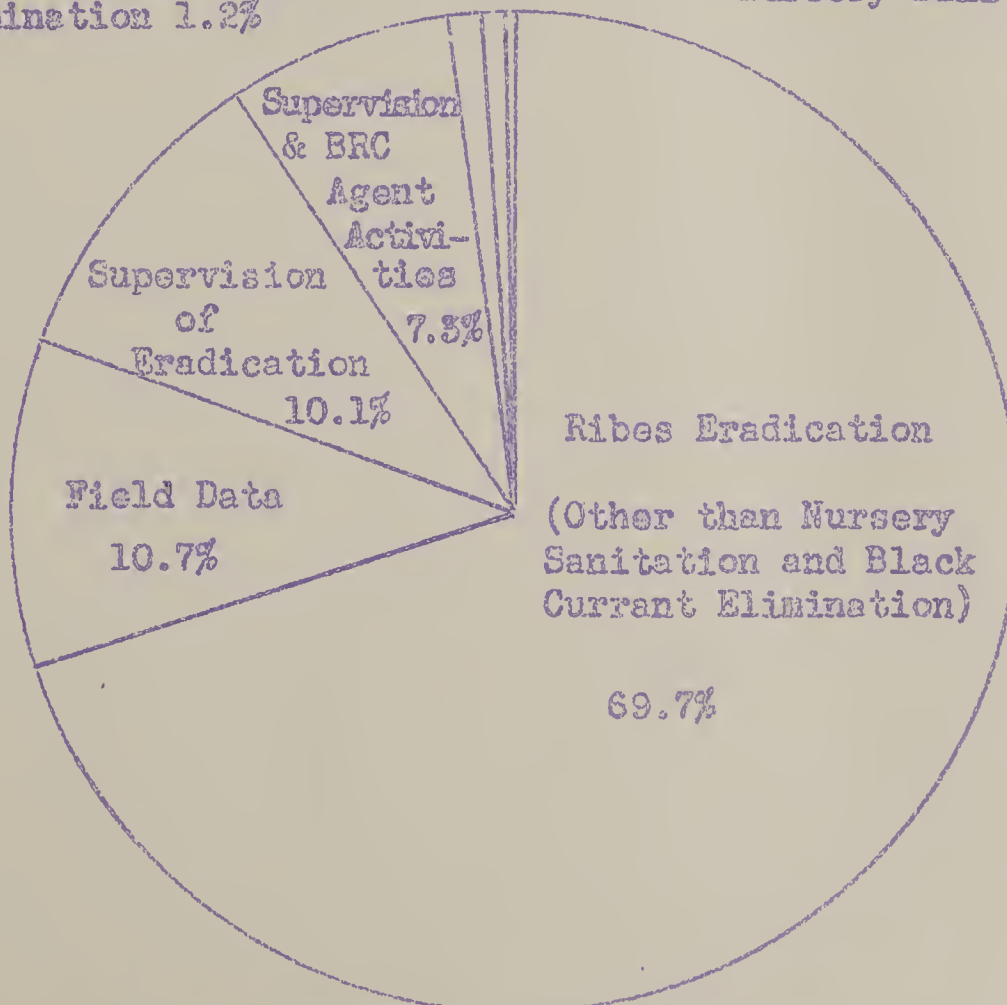
Ribes Compensation 0.4%



Total State Expenditures - \$220,903.68

Treatment Diseased Pines 0.8%
Black Currant Elimination 1.2%

Nursery Sanitation 0.2%



Total Federal Expenditures \$3,199,870.04

BLISTER RUST CONTROL ACTIVITIES AND ACCOMPLISHMENTS
UNDER ALL PROGRAMS IN THE NORTHEASTERN STATES
DURING PERIOD 1918-1936, INCLUSIVE

THE UNIVERSITY OF CHICAGO
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Table 89 - SUMMARY OF INITIAL RIBES ERADICATION WORK IN NORTHEASTERN STATES 1918 - 1936 Incl.

STATE	Year 1918				Year 1919				Year 1920				Year 1921				Year 1922						
	Acres	No. Ribes		Total Cost	Per Acre Cost/Ribes	Acres	No. Ribes		Total Cost	Per Acre Cost/Ribes	Acres	No. Ribes		Total Cost	Per Acre Cost/Ribes	Acres	No. Ribes		Total Cost	Per Acre Cost/Ribes			
		Wild	Cult				Wild	Cult				Wild	Cult				Wild	Cult					
MAINE	4,900	91,862	235	5,179.23	108	18.70	—	—	6,136.10	67	36.20	10,283	176,788	636	4,994.05	49	17.19	3,398.76	02	36	5,012.48	042	2.3
N. H.	66,292	959,315	8,427	26,089.09	39	14.80	1,659,936	21,171	35,371.86	22	10.15	203,373	2,061,996	22,206	37,038.66	18	10.10	22,640.93	16	12.00	28,706.64	161	10.2
V. T.	4,698	78,563	77	5,182.64	110	16.80	96,749	—	2,214.26	90	39.32	4,601	36,294	74	3,391.60	75	8.06	3,464.01	55	9.58	6,150.24	455	15.0
MASS.	18,706	356,067	1,919	15,805.31	84	19.03	201,882	2,374	8,198.16	75	18.60	19,389	1,224,306	1,421	10,422.67	54	63.14	10,230.54	31	19.20	13,375.09	208	24.5
R. I.	12,715	13,927	492	3,527.97	28	1.09	45,320	16,571	5,609.74	14	1.12	23,164	5,973	1,550	3,796.92	16	26	3,826.92	14	59	18,400.00	160	10
CONN.	800	10,000	—	Est. 400.00	50	12.80	31,000	—	2,323.34	93	12.40	2,170	42,793	2	1,974.70	91	19.72	2,664.07	33	51.8	4,651.50	753	22.2
N. Y.	29,337	904,153	11,000	43,679.16	140	30.81	2,181,286	2,675	79,689.08	343	94.04	7,438	753,790	47	32,043.94	43	104.30	46,600.73	329	89.90	34,082.70	3,09	59.3
TOTALS	137,438	2,413,887	22,109	99,863.40	75	17.60	4,549,948	27,877	139,500.56	55	18.10	270,318	4,301,940	25,936	93,662.74	35	15.90	92,883.36	24	9.80	96,818.65	204	10.2

STATE	Year 1923				Year 1924				Year 1925				Year 1926				Year 1927			
	No. Ribes		Total		No. Ribes		Total		No. Ribes		Total		No. Ribes		Total		No. Ribes		Total	
	Acres	Per Acre	Cost	Ribes	Acres	Per Acre	Cost	Ribes	Acres	Per Acre	Cost	Ribes	Acres	Per Acre	Cost	Ribes	Acres	Per Acre	Cost	Ribes
MAINE	336,432	1,208,970	12,095	19,327.36	107	3.6	—	—	399,907	1,829,349	11,579	22,734.31	107	4.0	274,034	1,700,870	15,041	20,070.86	073	6.2
N.H.	267,007	3,490,130	24,779	51,604.66	193	13.0	—	—	324,734	4,023,359	14,941	52,599.44	162	24	237,702	3,180,730	5,996	42,408.99	178	13.4
V.T.	23,950	272,246	1,234	8,080.55	337	11.4	—	—	24,714	177,107	592	8,951.78	362	12	25,226	310,717	640	8,587.67	340	12.3
MASS.	104,988	1,750,693	14,887	26,802.33	145	9.5	—	—	150,465	2,063,070	38,777	34,648.43	219	12.8	190,945	745,446	3,3610	21,355.13	112	3.9
R.I.	20,068	13,011	1,464	1,701.36	061	0.5	—	—	47,480	22,361	2,953	2,092.01	044	0.5	25,640	4,994	1,928	1,519.04	059	0.2
CONN.	14,062	288,333	240	6,663.14	488	20.5	—	—	17,215	289,034	2,447	5,961.73	347	16.7	13,735	270,747	680	4,592.03	334	19.7
N.Y.	13,459	906,617	367	44,229.78	287	57.3	—	—	25,190	1,061,368	2,801	40,307.02	162	42.1	33,611	993,445	1,153	35,323.38	105	29.6
TOTALS	870,766	7,930,028	53,074	158,609.38	102	10.2	—	—	997,793	9,425,728	73,810	167,914.72	168	94	800,893	7,206,949	59,048	133,857.10	167	90

STATE	Year 1928				Year 1929				Year 1930				Year 1931				Year 1932			
	No. Ribes		Total		No. Ribes		Total		No. Ribes		Total		No. Ribes		Total		No. Ribes		Total	
	Acres	Per Acre	Cost	Ribes	Acres	Per Acre	Cost	Ribes	Acres	Per Acre	Cost	Ribes	Acres	Per Acre	Cost	Ribes	Acres	Per Acre	Cost	Ribes
MAINE	202,359	1,577,254	8,778	22,417.60	111	7.8	—	—	234,459	2,129,942	18,244	21,937.78	094	2.1	197,075	2,096,207	10,357	23,443.51	119	0.6
N.H.	145,329	2,041,412	4,076	31,572.35	217	14.0	—	—	155,719	1,866,554	6,178	30,961.38	199	12.0	218,137	2,807,150	3,192	47,766.94	219	12.9
V.T.	14,475	147,930	144	6,020.30	416	10.2	—	—	10,295	87,868	397	5,245.67	510	8.5	7,245	74,039	83	4,243.45	506	10.2
MASS.	227,088	4,979,963	34,146	28,519.45	126	2.2	—	—	243,879	825,565	32,226	29,627.84	122	3.4	108,683	956,376	8,072	15,294.78	141	9.2
R.I.	21,461	17,777	615	2,629.64	119	0.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—
CONN.	73,981	90,412	1,289	6,727.34	091	1.3	—	—	283,994	127,124	9,471	7,120.74	251	4.5	27,253	33,330	3,140	3,013.79	111	12
N.Y.	85,454	1,740,941	9,411	45,570.13	533	54.0	—	—	110,465	1,904,238	6,077	50,923.31	497	16.1	89,894	1,306,496	4,302	47,116.14	524	14.5
SUB-TOTALS	770,117	6,121,689	50,459	143,456.81	106	7.9	—	—	791,211	6,941,308	72,593	154,046.92	195	8.8	648,287	7,313,600	29,146	140,896.61	217	11.3
N.E. - N.Y.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
PA.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
ALL STATES	770,117	6,121,689	50,459	143,456.81	106	7.9	—	—	796,670	7,270,976	73,154	157,033.18	198	9.1	660,032	7,970,368	30,009	149,530.99	227	12.1

STATE	Year 1933				Year 1934				Year 1935				Year 1936				Grand Totals 1918-1936 Incl.			
	No. Ribes		Total		No. Ribes		Total		No. Ribes		Total		No. Ribes		Total		No. Ribes		Total	
	Acres	Per Acre	Cost	Ribes	Acres	Per Acre	Cost	Ribes	Acres	Per Acre	Cost	Ribes	Acres	Per Acre	Cost	Ribes	Acres	Per Acre	Cost	Ribes
MAINE	73,135	1,885,006	4,919	37,137.52	508	25.8	—	—	89,896	3,880,322	2,518	53,038.50	619	43.2	134,917	4,965,441	2,944	103,299.31	790	36.8
N.H.	77,075	4,122,871	752	48,211.90	626	53.5	—	—	75,478	3,503,660	8	47,564.53	633	46.4	89,318	3,469,646	3,75	63,255.07	705	38.0
V.T.	17,280	232,624	225	12,095.21	700	13.5	—	—	19,483	463,240	20	14,511.69	745	23.0	20,240	478,377	210	23,038.50	816	16.9
MASS.	14,003	223,388	48	5,545.16	396	16.0	—	—	12,713	834,977	16,73	11,352.77	693	65.7	45,417	755,168	14,522	29,499.50	628	16.6
R.I.	80	129	—	91.07	121	1.6	—	—	—	—	—	—	—	—	—	—	—	—	—	—
CONN.	—	—	—	—	—	—	—	—	36,050	77,987	1,202	9,320.12	259	2.2	48,815	356,328	4,176	20,573.44	426	7.4
N.Y.	75,773	659,088	3,113	31,633.48	417	8.7	—	—	182,369	5,667,497	8,115	111,684.67	612	31.2	245,452	6,418,062	13,360	213,836.17	871	26.1
SUB-TOTALS	257,346	7,123,968	9,057	134,720.34	523	27.7	—	—	416,009	14,444,383	13,536	250,072.28	881	34.7	617,924	16,456,753	35,607	461,688.26	747	26.6
N.E. - N.Y.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
N.J.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
PA.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
ALL STATES	277,145	8,829,780	9,269	157,088.35	567	31.9	—	—	461,888	19,433,696	17,023	308,140.46	667	48.1	684,285	22,719,742	44,440	574,553.62	899	33.2

INCLUDES ALL RIBES ERADICATION WORK PERFORMED UNDER ALL PROGRAMS. HOWEVER, ALL BLACK CURRANT ELIMINATION AND NURSERY SANITATION PROJECTS SINCE 1929 ARE EXCLUDED

Table 90 = SUMMARY OF RIBES RE-ERADICATION WORK IN NORTHEASTERN STATES 1923-1936 Incl.

STATE	Year 1923					Year 1924					Year 1925					Year 1926					Year 1927												
	Acres Re-examined	No. Ribes		Total Cost	Per Acre Cost	Acres Re-examined	No. Ribes		Total Cost	Per Acre Cost	Acres Re-examined	No. Ribes		Total Cost	Per Acre Cost	Acres Re-examined	No. Ribes		Total Cost	Per Acre Cost	Acres Re-examined	No. Ribes		Total Cost	Per Acre Cost	Acres Re-examined	No. Ribes		Total Cost	Per Acre Cost			
		Wild	Cult.				Wild	Cult.				Wild	Cult.				Wild	Cult.				Wild	Cult.				Wild	Cult.			Wild	Cult.	Wild
MAINE	20	284	—	5.80	.290	142	17,608	—	359.60	.290	142	644	9,145	—	186.76	.290	142	728	54,199	10	364.59	.508	744	1,010	438.25	.433	193	—	19,480	—	438.25	.433	193
N.H.	430	6,603	—	46.82	.109	11.3	75,168	48	990.79	.149	11.3	24,008	113,221	406	2,516.61	.105	4.7	32,046	159,488	677	4,406.89	.137	50	74,034	9,850.29	.133	6.7	—	496,160	341	9,850.29	.133	6.7
V.T.	1240	6,324	—	417.88	.337	5.1	4,967	—	328.24	.337	5.1	1,396	7,120	—	470.45	.337	5.1	5,850	29,835	—	1,971.45	.337	5.1	2,315	841.73	.364	7.9	—	18,421	—	841.73	.364	7.9
MASS.	16,943	25,414	—	1,609.59	.095	1.5	1,966	—	124.55	.095	1.5	4,256	6,384	—	404.32	.095	1.5	6,145	9,218	—	583.78	.095	1.5	14,942	1,862.08	.125	2.8	—	42,420	27	1,862.08	.125	2.8
R.I.	3,240	1,264	—	194.40	.060	0.4	2,350	—	210.00	.042	0.5	—	—	—	—	—	—	2,670	1,197	—	250.00	.094	0.5	—	—	—	—	—	—	—	—	—	—
CONN.	—	—	—	—	—	—	—	—	—	—	—	2,371	2,050	4	903.27	.381	0.9	570	7,669	12	286.76	.503	13.4	8,836	6,848.57	.775	13.9	—	112,384	493	6,848.57	.775	13.9
N.Y.	—	—	—	—	—	—	—	—	—	—	—	1,326	1,420	—	463.98	.350	1.1	1,079	1,499	—	77.66	.072	1.4	1,279	714.18	.558	13.1	—	16,741	—	714.18	.558	13.1
SUB-TOTALS N.E.-N.Y.	21,873	39,889	—	2,274.49	.104	1.8	102,059	48	2,013.18	.133	6.7	34,001	139,340	410	4,945.39	.145	4.1	43,088	263,105	699	7,941.13	.162	5.4	102,416	20,555.10	.201	6.9	—	705,586	361	20,555.10	.201	6.9
PA.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
ALL STATES	21,873	39,889	—	2,274.49	.104	1.8	102,059	48	2,013.18	.133	6.7	34,001	139,340	410	4,945.39	.145	4.1	43,088	263,105	699	7,941.13	.162	5.4	102,416	20,555.10	.201	6.9	—	705,586	361	20,555.10	.201	6.9

STATE	Year 1928					Year 1929					Year 1930					Year 1931					Year 1932									
	Acres Re-examined	No. Ribes		Total Cost	Per Acre Cost	Ribes Re-examined	No. Ribes		Total Cost	Per Acre Cost	Ribes Re-examined	No. Ribes		Total Cost	Per Acre Cost	Ribes Re-examined	No. Ribes		Total Cost	Per Acre Cost	Ribes Re-examined	No. Ribes		Total Cost	Per Acre Cost	Ribes Re-examined				
		Wild	Cult.				Wild	Cult.				Wild	Cult.				Wild	Cult.				Wild	Cult.				Wild	Cult.		
MAINE	708	18,538	—	180.30	.255	28.2	232	34,771	—	234.60	1.01	149.9	910	27,570	216	578.95	.715	34.0	2,165	70,096	134	1,395.09	644	32.4	30,436	287,497	1157	7285.10	.239	9.4
N.H.	83,201	261,126	1,144	9,272.61	.111	3.1	96,425	236,445	466	9,648.02	.100	2.5	6,133	33,080	5	829.27	.123	4.9	21,357	130,583	200	3,649.78	.171	6.1	17,308	208,690	79	2,942.97	.170	12.1
V.T.	2,292	11,410	52	866.07	.318	5.0	3,005	22,786	56	1,249.60	.416	7.6	5,877	20,572	25	1,660.26	.283	3.5	3,535	10,287	3	980.77	.277	2.9	4,373	24,251	697	1,414.36	.323	5.5
MASS.	15,875	25,437	7	1,249.81	.079	1.6	22,961	16,194	655	2,658.67	.127	0.8	28,108	27,995	83	2,825.55	.101	1.0	85,714	136,036	2,388	6,624.90	.077	1.6	148,022	227,776	2,104	13,441.03	.091	1.5
R.I.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
CONN.	1,124	24,973	75	1,286.50	.114	22.2	6,203	7,283	1451	305.80	.146	1.2	2,342	10,829	455	1,227.67	.324	4.6	4,540	85,051	—	4,005.85	.882	18.7	7,337	134,456	1,216	4,592.40	.628	18.3
N.Y.	10,335	216,828	824	5,035.30	.084	20.9	9,291	78,433	668	6,543.17	.304	8.4	8,327	95,691	169	3,014.16	.362	11.5	5,305	18,706	67	1,331.05	.256	3.6	10,822	72,265	340	4,116.81	.380	6.7
SUB-TOTALS N.E. - N.Y.	113,595	558,312	2,102	17,890.59	.157	4.9	136,117	395,912	3296	21,239.06	.156	2.9	52,197	215,737	953	10,135.86	.194	4.1	122,516	450,759	2,792	17,987.44	.147	3.7	224,273	960,530	5668	35,210.98	.157	4.3
PA.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1,408	39,384	—	1,047.33	.744	28.0	2,428	57,059	7	1,846.45	.760	23.5
ALL STATES	113,595	558,312	2,102	17,890.59	.157	4.9	136,117	395,912	3296	21,239.06	.156	2.9	52,197	215,737	953	10,135.86	.194	4.1	123,924	490,143	2,792	19,034.77	.154	4.0	226,701	1,017,589	5,675	37,057.43	.163	4.5

STATE	Year 1933					Year 1934					Year 1935					Year 1936					Grand Totals 1923-1936 Incl.								
	Acres Re-examined	No. Ribes		Total Cost	Per Acre Cost Ribes	Acres Re-examined	No. Ribes		Total Cost	Per Acre Cost Ribes	Acres Re-examined	No. Ribes		Total Cost	Per Acre Cost Ribes	Acres Re-examined	No. Ribes		Total Cost	Per Acre Cost Ribes	Acres Re-examined	No. Ribes		Total Cost	Per Acre Cost Ribes				
		Wild	Cult.				Wild	Cult.				Wild	Cult.				Wild	Cult.				Wild	Cult.			Wild	Cult.		
MAINE	23,047	365,439	68	6,900.38	.299	15.9	290,762	20	7,711.36	.268	10.1	64,166	1,063,168	446	37,661.57	.587	16.6	203,794	4,377,479	90,59	110,753.86	.543	21.5	357,823	6,360,936	11,118	174,056.23	.486	10.5
N.H.	21,453	571,195	5	8,232.92	.384	26.6	388,588	-	4,815.13	.439	35.4	57,413	1,438,645	149	37,897.88	.658	25.1	165,947	3,797,938	1,195	99,733.46	.601	22.9	617,990	7,916,930	4,715	154,833.44	.315	12.8
VT.	9,939	90,521	3	7,197.26	.724	9.1	258,508	-	10,762.31	.848	20.4	22,633	254,089	110	16,700.46	.738	11.2	67,315	720,273	469	27,455.54	1.01	26.4	103,434	1,479,364	1,415	72,316.38	.699	14.3
MASS.	83,104	330,385	2821	14,218.90	.171	4.0	256,113	1,499	14,413.42	.131	2.3	66,914	627,044	2,739	43,140.86	.645	9.4	68,175	1,112,632	3,029	60,448.00	.887	6.3	670,889	2,844,994	15,352	163,605.46	.244	4.2
R.I.	5,233	3,459	86	4,433.53	.847	0.7	74,750	592	13,297.35	.319	1.6	72,260	93,682	3,147	28,834.74	.399	1.3	92,243	85,172	4,321	30,979.23	.336	.9	228,347	267,449	8,161	79,617.56	.349	1.2
CONN.	42,513	300,299	109	16,628.59	.391	7.1	782,593	74	24,768.31	.678	21.4	56,233	781,670	2,606	36,659.22	.652	13.9	36,705	519,811	854	31,388.66	.355	14.2	205,311	2,769,068	7,349	129,501.60	.631	13.5
N.Y.	65,550	1,268,914	283	41,450.32	.632	19.4	619,259	4,726	37,950.22	.464	7.6	79,504	1,147,014	790	43,818.94	.551	14.4	15,220	2,328,262	2,446	97,461.89	.846	20.2	389,866	5,865,032	10,313	241,977.68	.621	15.0
SUB-TOTALS N.E.-N.Y.	250,839	2,930,212	3,975	99,061.90	.395	11.7	2,670,553	6,859	113,718.12	.352	8.3	419,123	5,405,312	9,987	244,713.67	.584	12.9	709,399	12,941,567	21,373	458,220.64	.646	18.2	2,573,660	27,778,873	58,423	1,055,908.35	.410	10.8
PA.	24,871	991,852	51	29,477.37	.119	39.9	1,029,235	62	42,690.37	.152	36.6	21,790	703,755	1,185	33,262.88	.153	32.3	26,674	1,262,042	688	44,272.64	1.66	47.3	105,326	4,093,327	1,993	152,597.04	.145	38.8
ALL STATES	275,710	3,922,064	3,426	128,539.27	.466	14.2	3,699,788	6,921	156,408.49	.445	10.5	440,913	6,109,067	11,172	277,976.55	.630	13.9	736,073	14,203,609	22,061	502,493.28	.583	19.3	2,678,986	31,562,200	60,416	1,208,505.39	.451	11.9

INCLUDES ALL RIBES ERADICATION WORK PERFORMED UNDER ALL PROGRAMS. HOWEVER, ALL BLACK CURRANT ELIMINATION AND NURSERY SANITATION PROJECTS SINCE 1923 ARE EXCLUDED.

T. 91 - SUMMARY OF RIBES ERADICATION WORK IN NORTHEASTERN STATES 1918 - 1936 Incl.
(INITIAL AND RE-ERADICATION WORK)

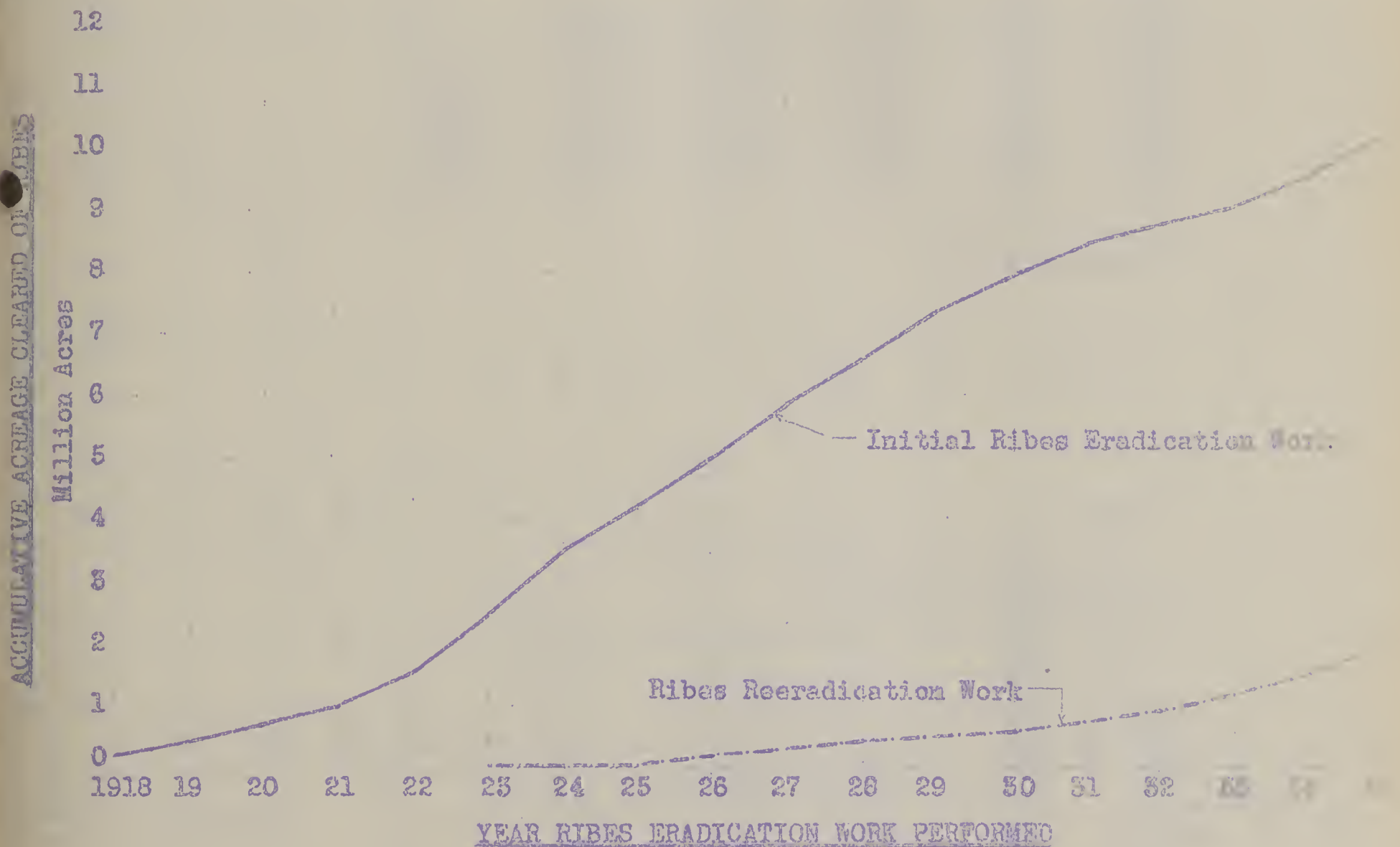
STATE	Year 1918					Year 1919					Year 1920					Year 1921					Year 1922				
	No. Ribes		Per Acre		Total Cost	No. Ribes		Per Acre		Total Cost	No. Ribes		Per Acre		Total Cost	No. Ribes		Per Acre		Total Cost	No. Ribes		Per Acre		Total Cost
	Acres	Wild	Cult.	Cost		Acres	Wild	Cult.	Cost		Acres	Wild	Cult.	Cost		Acres	Wild	Cult.	Cost		Acres	Wild	Cult.	Cost	
MAINE	4,910	91,862	235	5,179.23	1,051.87	9,216	333,775	—	6,136.10	22,101.5	10,283	176,788	636	4,994.05	49,171.9	156,221	56,304	708	3,398.76	.02	36	190,209	449,287	3,688	8,012.48
N.H.	66,232	959,315	8,427	26,089.09	.39	163,413	1,659,936	21,171	35,371.86	22,101.5	203,373	2,061,996	22,206	37,038.66	.18	10,101	137,827	1,654,443	9,713	22,640.93	.16	12,001	178,489	1,816,829	28,706.64
V.T.	4,698	78,563	17	5,182.64	1.10	2,460	96,749	—	2,214.26	90,393.2	4,501	36,294	74	3,391.60	.75	8,061	6,319	60,537	131	3,464.01	.55	9,581	201,906	812	6,150.24
MASS.	18,706	356,067	1,919	15,805.31	.84	10,849	201,882	2,374	8,156.18	.75	19,389	1,224,306	1,421	10,422.87	.54	63,114	32,933	632,618	4,631	10,290.54	.31	19,201	157,829	2,368	13,375.09
R.I.	12,715	13,927	492	3,527.97	.28	1,091	45,320	1,657	5,609.74	.14	23,164	5,973	1,580	3,796.92	.16	26,971	26,971	16,022	552	3,826.92	.14	591	11,764	132	1,840.00
CONN.	800	10,000	—	Est 400.00	.50	2,500	31,000	—	2,323.34	.93	12,401	42,793	2	1,974.70	.91	19,721	8,000	41,470	6	2,664.07	.33	5,181	137,501	—	4,651.50
N.Y.	29,337	904,153	11,000	43,679.16	1.48	23,194	2,181,286	2,675	79,689.08	3.43	7,438	753,790	47	32,043.94	4.31	101,301	14,183	1,275,709	21	46,600.13	3.29	89,930	654,231	—	34,082.70
TOTALS	137,458	2,413,897	22,150	99,863.40	.73	252,043	4,549,948	27,871	139,500.56	.55	18,101	4,301,940	25,936	93,662.74	.35	15,930	382,454	3,737,103	15,762	92,865.96	.24	9,880	484,912	16,061	96,186.51

STATE	Year 1923					Year 1924					Year 1925					Year 1926					Year 1927				
	No. Ribes		Per Acre		Total Cost	No. Ribes		Per Acre		Total Cost	No. Ribes		Per Acre		Total Cost	No. Ribes		Per Acre		Total Cost	No. Ribes		Per Acre		Total Cost
	Acres	Wild	Cult.	Cost		Acres	Wild	Cult.	Cost		Acres	Wild	Cult.	Cost		Acres	Wild	Cult.	Cost		Acres	Wild	Cult.	Cost	
MAINE	336,452	1,209,282	12,095	19,333.16	.057	401,227	1,846,957	11,599	23,093.91	.057	274,678	1,710,015	15,041	20,257.62	.073	304,437	3,106,579	17,562	21,280.01	.069	261,481	2,601,639	10,225	28,513.71	.086
N.H.	268,237	3,496,733	24,779	51,651.48	.192	331,402	4,098,527	14,989	53,590.23	.162	261,710	3,293,951	6,402	44,925.60	.172	210,333	3,127,909	4,289	45,606.67	.217	226,019	2,672,166	2,510	41,078.84	.182
V.T.	25,190	278,570	1,234	8,498.43	.337	11,000	182,154	592	9,280.02	.361	26,622	317,837	640	9,058.12	.340	22,650	257,743	1,404	10,253.44	.453	19,405	280,781	314	8,233.95	.424
MASS.	201,931	1,176,107	14,887	28,411.92	.140	159,776	2,025,036	38,777	34,772.98	.217	193,201	751,830	33,610	21,759.45	.111	189,230	1,088,039	25,596	27,281.37	.144	299,353	906,490	32,760	27,940.03	.093
R.I.	31,308	14,275	1,464	1,895.96	.064	52,460	24,711	2,993	2,302.01	.044	25,640	4,994	1,928	1,519.04	.059	28,207	17,635	203	1,924.23	.068	9,795	22,279	521	17,000.66	.175
CONN.	14,062	288,333	248	6,863.14	.488	17,215	289,034	2,447	5,981.73	.347	16,106	272,797	684	5,495.30	.341	22,257	182,826	330	5,062.35	.227	20,904	152,825	1,208	8,633.20	.413
N.Y.	15,459	906,617	367	44,229.78	2.87	25,198	1,061,368	2,501	40,907.02	1.62	34,937	994,865	1,153	35,787.36	1.02	38,073	1,077,340	2,087	37,129.76	.975	62,955	1,410,646	2,207	45,523.96	.723
TOTALS	892,639	7,969,917	55,074	160,883.87	.180	1,012,986	9,527,787	73,858	169,927.90	.168	944	7,346,289	59,458	138,802.49	.166	815,187	8,858,071	51,471	148,537.83	.182	899,852	8,046,826	49,745	155,618.55	.173

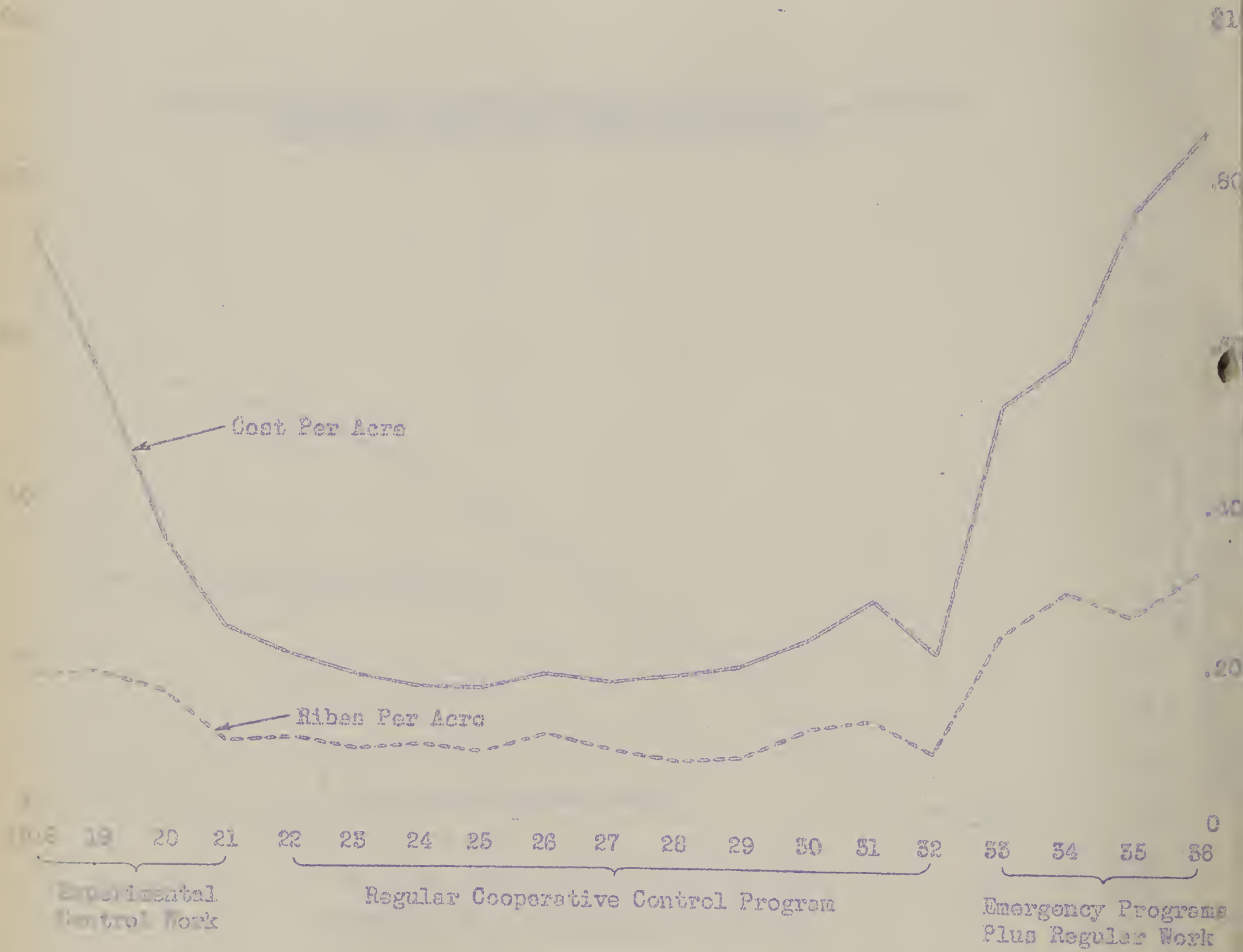
STATE	Year 1928					Year 1929					Year 1930					Year 1931					Year 1932				
	No. Ribes		Per Acre		Total Cost	No. Ribes		Per Acre		Total Cost	No. Ribes		Per Acre		Total Cost	No. Ribes		Per Acre		Total Cost	No. Ribes		Per Acre		Total Cost
	Acres	Wild	Cult.	Cost		Acres	Wild	Cult.	Cost		Acres	Wild	Cult.	Cost		Acres	Wild	Cult.	Cost		Acres	Wild	Cult.	Cost	
MAINE	203,067	1,595,792	8,778	22,597.90	.111	7.9	234,691	1,164,713	18,244	22,194.38	.095	9.2	197,885	2,123,777	10,573	24,042.46	.121	10.7	116,709	1,336,418	4,980	19,824.78	.169	11.6	81,387
N.H.	228,530	2,302,538	5,220	40,844.96	.179	10.1	252,144	2,102,999	6,644	40,609.40	.161	8.3	224,870	2,840,230	3,197	48,596.21	.216	12.6	179,361	3,032,275	4,222	50,246.09	.280	16.9	97,232
V.T.	16,767	159,340	196	6,886.37	.411	9.5	13,300	110,671	453	6,435.47	.488	8.3	13,122	94,611	108	5,903.71	.430	7.2	11,660	49,114	132	4,125.07	.354	4.2	11,849
MASS.	242,933	523,400	34,153	29,768.26	.123	2.2	264,840	841,759	32,881	32,486.51	.123	3.2	136,791	1,024,371	8,155	18,120.33	.132	7.5	115,529	264,215	6,658	13,116.83	.114	2.3	161,606
R.I.	21,461	17,777	615	2,629.64	.119	0.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
CONN.	75,105	123,385	1,364	8,013.84	.107	1.6	34,597	134,407	10,922	8,034.54	.232	3.9	29,595	44,159	3,995	4,241.46	.143	1.5	6,050	110,827	260	4,735.50	.789	18.3	7,337
N.Y.	95,849	1,957,769	10,235	50,605.43	.528	20.4	127,156	1,982,671	6,745	65,466.48	.512	15.5	98,221	1,402,189	4,471	50,130.30	.510	14.3	123,558	1,502,930	5,023	56,764.66	.439	12.2	153,997
SUB-TOTALS N.E. - N.Y.	883,712	6,680,001	60,561	161,347.40	.183	7.6	927,328	7,337,220	75,889	175,286.78	.189	7.9	700,484	7,529,337	30,099	151,034.47	.216	10.7	552,867	6,305,779	21,275	148,813.33	.289	11.4	521,980
PA.	—	—	—	—	—	—	5459	329,670	561	3,756.26	.688	60.4	11,745	636,768	863	8,631.48	.735	55.9	25,424	868,342	703	11,026.51	.434	34.2	22,840
ALL STATES	883,712	6,680,001	60,561	161,347.40	.183	7.6	932,787	7,666,890	76,450	179,043.04	.192	8.2	712,229	8,186,105	30,962	159,665.95	.224	11.5	578,291	7,174,121	21,978	159,839.84	.276	12.4	544,660

STATE	Year 1933					Year 1934					Year 1935					Year 1936					Grand Totals 1918-1936 Incl.									
	Acres	No Ribes		Total Cost	Per Acre Cost Ribes	Acres	No Ribes		Total Cost	Per Acre Cost Ribes	Acres	No Ribes		Total Cost	Per Acre Cost Ribes	Acres	No Ribes		Total Cost	Per Acre Cost Ribes	Acres	No Ribes		Total Cost	Per Acre Cost Ribes					
		Wild	Cult.				Wild	Cult.				Wild	Cult.				Wild	Cult.				Wild	Cult.			Wild	Cult.			
MAINE	96,182	2,251,325	4,987	44,037.90	.458	23.4	118,719	4,171,084	2,546	63,349.88	.534	35.1	193,083	6,028,609	3,390	142,930.88	.718	30.3	357,436	13,576,831	13,221	233,842.09	.654	38.0	3,554,473	45,874,023	143,234	726,286.29	.204	12.9
N.H.	98,528	4,694,066	757	56,444.82	.573	47.6	86,445	3,888,948	8	52,379.66	.606	45.0	146,731	4,908,291	324	10,115.29	.687	33.5	306,887	10,064,507	5,745	206,376.29	.672	32.8	3,667,823	59,740,877	151,009	1,000,992.31	.273	16.3
VT.	27,219	323,145	228	19,232.47	.709	11.9	32,173	72,746	20	25,274.00	.786	22.4	50,881	732,466	320	39,758.96	.781	14.4	113,154	4,994,198	2,385	129,566.94	.115	44.1	441,170	9,035,203	13,877	306,825.84	.695	20.5
MASS.	97,107	533,773	2,669	19,764.06	.204	5.7	123,132	1,091,090	3,172	25,766.19	.209	8.9	112,331	1,382,212	17,261	71,640.36	.638	12.3	127,805	1,903,930	3,918	96,391.29	.754	14.9	2,573,744	18,459,772	27,048	521,907.98	.203	7.2
R.I.	5,313	3,588	86	4,530.60	.853	0.7	41,726	74,730	532	13,297.35	.319	1.8	98,517	1,072,213	3,467	35,989.01	.365	1.1	96,442	89,259	4,764	33,912.71	.352	.9	532,062	475,265	21,205	119,968.02	.225	.9
CONN.	42,513	300,299	109	16,628.59	.391	7.1	72,587	860,580	1,276	34,088.43	.470	11.9	104,548	1,138,198	6,782	57,232.66	.547	10.9	78,974	6,575,567	3,794	46,323.98	.587	8.3	5,614,95	4,952,457	34,243	227,941.13	.406	8.6
N.Y.	141,323	1,928,002	3,396	73,083.80	.517	13.6	264,257	6,306,756	12,641	149,634.89	.566	23.9	324,956	7,565,076	13,850	257,677.11	.793	23.3	544,857	15,946,283	26,237	522,649.00	.959	29.3	2,138,478	51,107,334	111,394	1,719,172.89	.804	23.9
SUB-TOTALS NE. - N.Y.	508,185	10,054,198	12,432	233,782.24	.460	19.8	739,039	17,114,936	20,395	363,790.40	.492	23.2	1,037,047	21,862,065	45,594	706,381.93	.681	21.1	1,625,555	47,232,575	60,064	1,269,083.10	.781	29.1	13,469,245	109,644,931	745,443	4,623,053.86	.343	14.1
N.J.							12,695	22,322	1,163	896.93	.071	1.8	1,482	18,663	351	2,096.33	1.41	12.6	2,565	6,795	199	2,291.07	.093	2.6	16,742	47,780	1,713	5,284.33	.316	2.9
PA.	44,670	269,646	263	51,845.38	1.16	60.4	61,339	5,996,426	2,386	99,861.62	1.63	97.8	86,669	6,948,081	9,667	144,031.91	1.66	80.2	156,258	8,429,377	13,663	247,968.31	1.59	53.9	414,204	26,784,396	31,455	375,052.62	1.39	64.7
ALL STATES	552,855	12,750,844	12,695	285,627.62	.517	23.1	813,073	23,133,684	23,944	464,548.95	.571	28.5	1,125,198	28,828,809	55,612	852,530.17	.757	25.6	1,784,378	55,668,747	73,926	1,519,342.48	.851	31.2	13,900,191	216,477,107	778,611	5,203,430.81	.374	15.6

PROGRESS IN ESTABLISHING AND MAINTAINING BLISTER RUST CONTROL
NORTHEASTERN STATES, 1918-1936, INCLUSIVE



COMPARISON BY YEARS OF PER ACRE VALUES FOR ALL RIBES ERADICATION WORK
NORTHEASTERN STATES - 1918 TO 1936, INCLUSIVE



COMPARISON BY PROGRAMS OF PER ACRE VALUES FOR RIBES PRODUCTION
NORTHEASTERN STATES - 1959-1962, INCLUSIVE

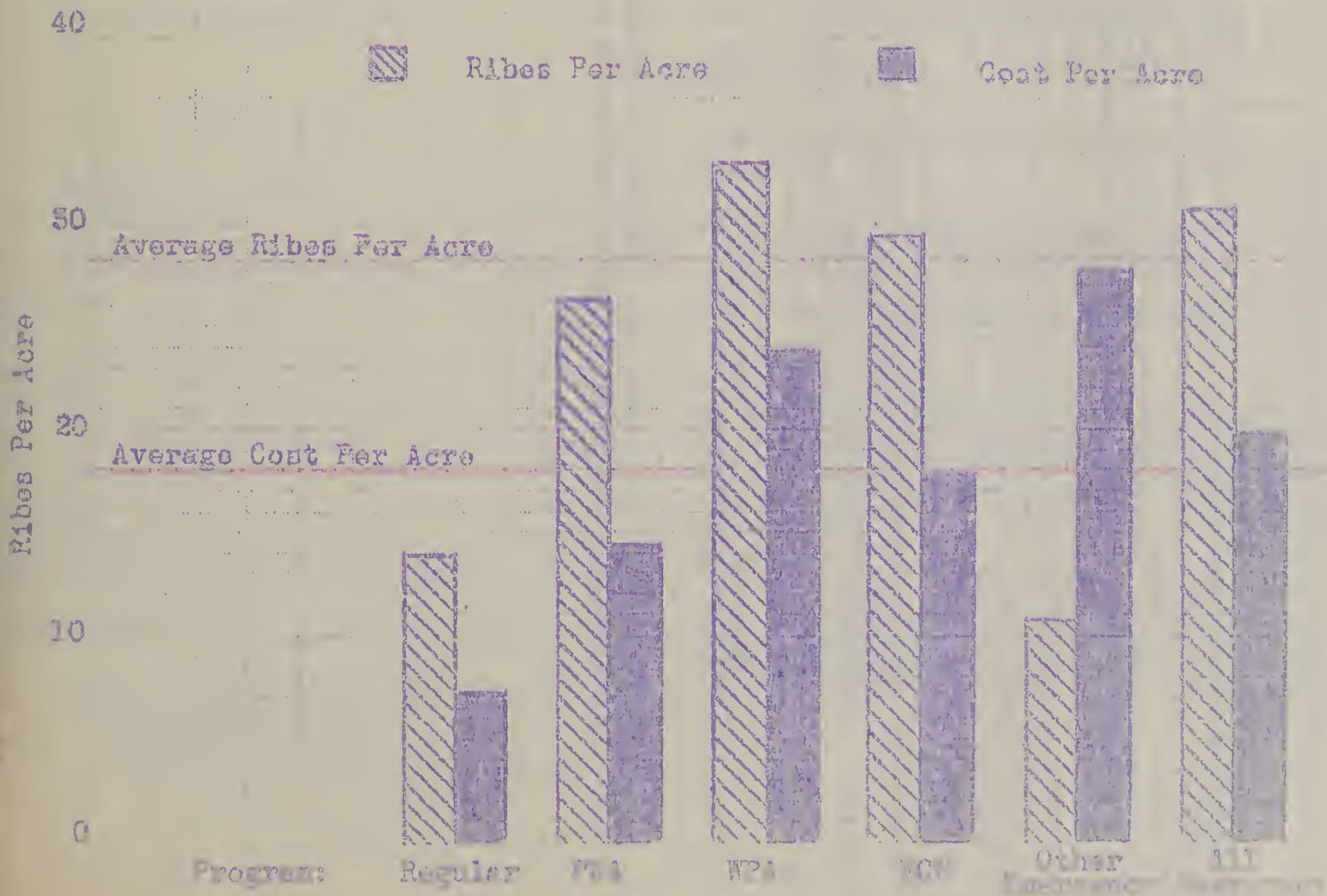
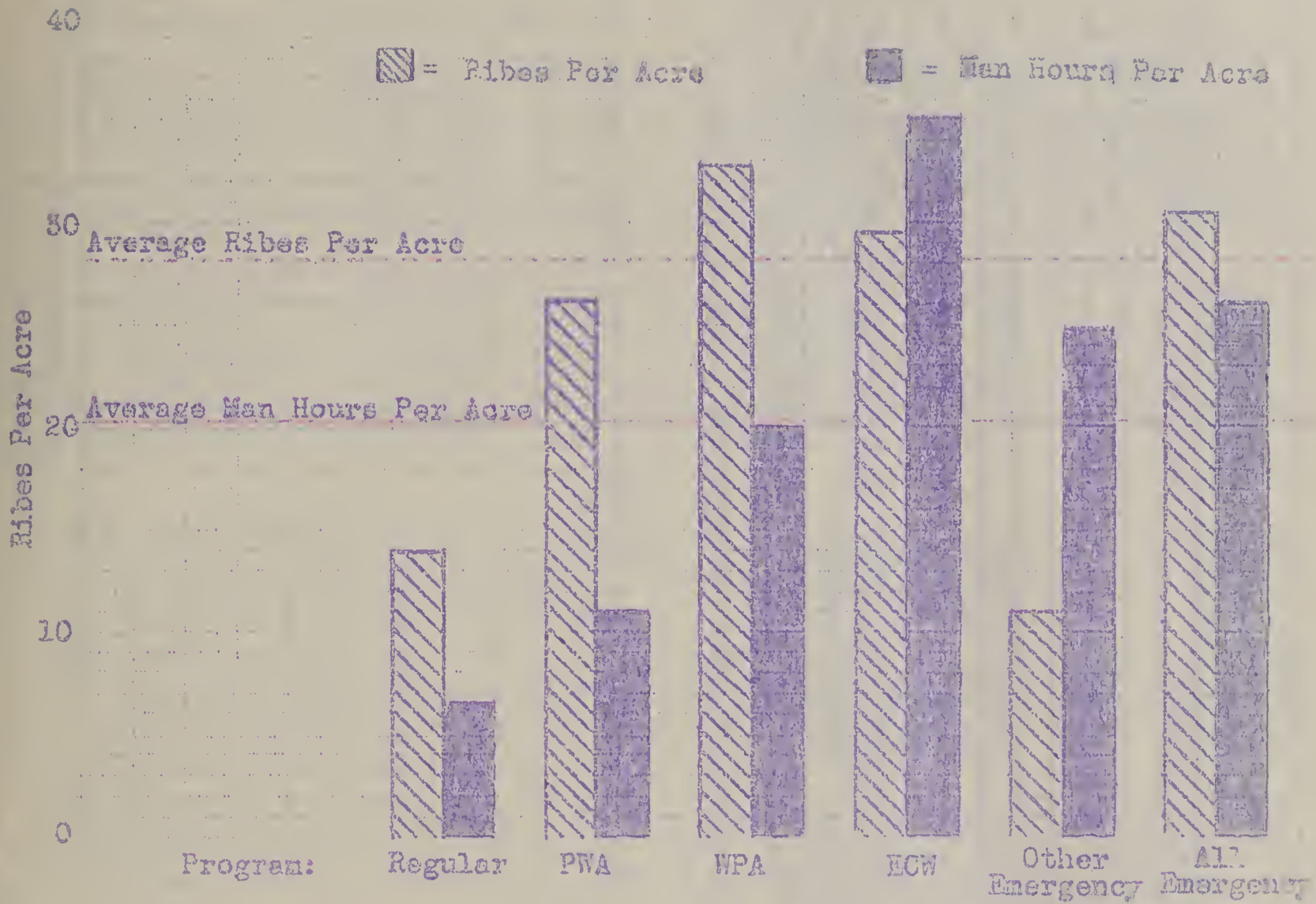


Table 92 - Ribes Eradication Work Performed On Federal Lands in Northeastern States
During Period 1924-1936, Inclusive (Regular and E.C.W. Programs)

Project	Type of Erad.	Total Acreage Worked	Ribes Pulled		Total Man Days	Cost				Per Acre				
			Wild	Cult.		E.C.W.	B.P.I.	Forest Service	Park Service	State	Total	Cost	Ribes Days	
Acadia National Park, Me.	Initial	19,443	858,184	293	10,574	12,168.49	3145.83	-	8345.53	-	23,659.85	1.22	44.1	.50
	Re-Erad.	7,881	32,806	-	3,016	4,941.72	-	-	-	-	4,941.72	.627	4.2	.53
	Total	27,324	890,990	293	13,590	17,110.21	3245.83	-	8345.53	-	28,601.57	1.05	32.6	.50
White Mt. National Forest, N.H.	Initial	7,949	807,788	-	2,791	3,231.25	75.63	1471.62	-	224.11	5,002.61	.629	101.7	.35
	Re-Erad.	3,245	269,089	-	1,478	2,337.41	-	-	-	-	2,337.41	.720	82.9	.25
	Total	11,194	1,076,877	-	4,269	5,568.66	75.63	1471.62	-	224.11	7,340.02	.656	96.2	.38
Allegheny National Forest, Pa.	Initial	4,158	759,375	30	2,246	3,166.92	136.56	507.71	-	-	3,811.19	.917	182.6	.51
	Re-Erad.	1,152	61,031	-	542	646.41	71.29	272.06	-	-	989.76	.859	53.0	.27
	Total	5,310	820,436	30	2,788	3,813.33	207.85	779.77	-	-	4,800.95	.904	154.5	.52
Totals	Initial	31,550	2,425,347	323	15,612	18,566.66	3358.02	1979.33	8345.53	224.11	32,473.65	1.03	176.9	.49
	Re-Erad.	12,278	362,956	-	5,036	7,925.54	71.29	272.06	-	-	8,268.89	.673	29.6	.27
	Total	43,828	2,788,303	323	20,647	26,492.20	3429.31	2251.39	8345.53	224.11	40,742.54	.950	63.6	.47

Basis of Costs: See page 24 for work performed under Regular Cooperative Program, and page 44 for E.C.W. activities.

Data in above table are included in preceding Ribes eradication summaries of work under Regular Cooperative and E.C.W. Programs; also in tables 89 to 91.

State	Total Acreage of Control Area	Total Acreage Worked 1918-1936 Incl.	Percentage Total Control Area Worked	Acreage Still To Be Worked			Estimated No. 8 Hour Days Required to do Remaining Work
				White Pine	Protection Zones	Total	
Maine	4,068,648	3,196,650	78.6	333,099	538,899	871,998	369,177
N.H.	3,363,220	3,049,833	90.7	183,085	130,302	313,387	47,302
Vt.	662,467	337,736	51.0	78,145	246,586	324,731	78,200
Mass.	1,957,840	1,902,855	97.2	19,501	35,484	54,985	8,527
R.I.	332,675	303,715	91.3	Potential Pine	28,960	28,960	8,000
Conn.	440,823	356,184	80.8	7,104	77,535	84,639	15,000
N.Y.	2,752,919	1,748,612	63.5	355,100	649,207	1,004,307	343,342
N.J.	33,395	16,742	50.1	1,839	14,814	16,653	2,000
Penna.	556,707	308,878	55.5	45,301	202,528	247,829	102,000
All States	14,168,694	11,221,205	79.2	1,023,174	1,924,315	2,947,489	925,000

Basis

The total acreage of the control area in each state consists of the total acreage initially cleared of Ribes up to 1936, inclusive, plus the estimated acreage still in need of initial protection.

The total acreage still to be worked in each state was compiled from estimates by townships submitted by the district or state blister rust control leaders. The man days required to do the remaining initial work are also estimates by the blister rust control leaders.

In New York, the blister rust control leaders reported an additional 199,383 acres of control work to protect 19,772 acres of scattered small lots of white pine. This acreage was not included in the above summary as the practicability of control work is questionable. An additional 459,774 acres was also reported for Pennsylvania to protect 27,982 acres of scattered white pine stands, but these data are not included in the above table.

Re-Eradication Work

State	Total Acreage Re-Worked 1918-1936, Incl.	Acreage Now Needing Re-Examination For Ribes Regrowth	% Necessary Re-Examination Work Completed	Estimated No. 8 Hour Days Required to do Necessary Re-Eradication Work
Maine	357,823	1,178,809	23.3	231,480
N.H.	617,990	1,812,953	25.4	156,716
Vt.	103,434	109,480	48.6	25,428
Mass.	670,889	1,122,895	37.4	157,063
R.I.	228,347	63,548	78.2	11,043
Conn.	205,311	29,339	87.5	14,533
N.Y.	389,866	389,724	50.0	121,486
N.J.				
Penna.	105,326	5,106	95.4	2,897
All States	2,678,986	4,711,854	36.2	720,646

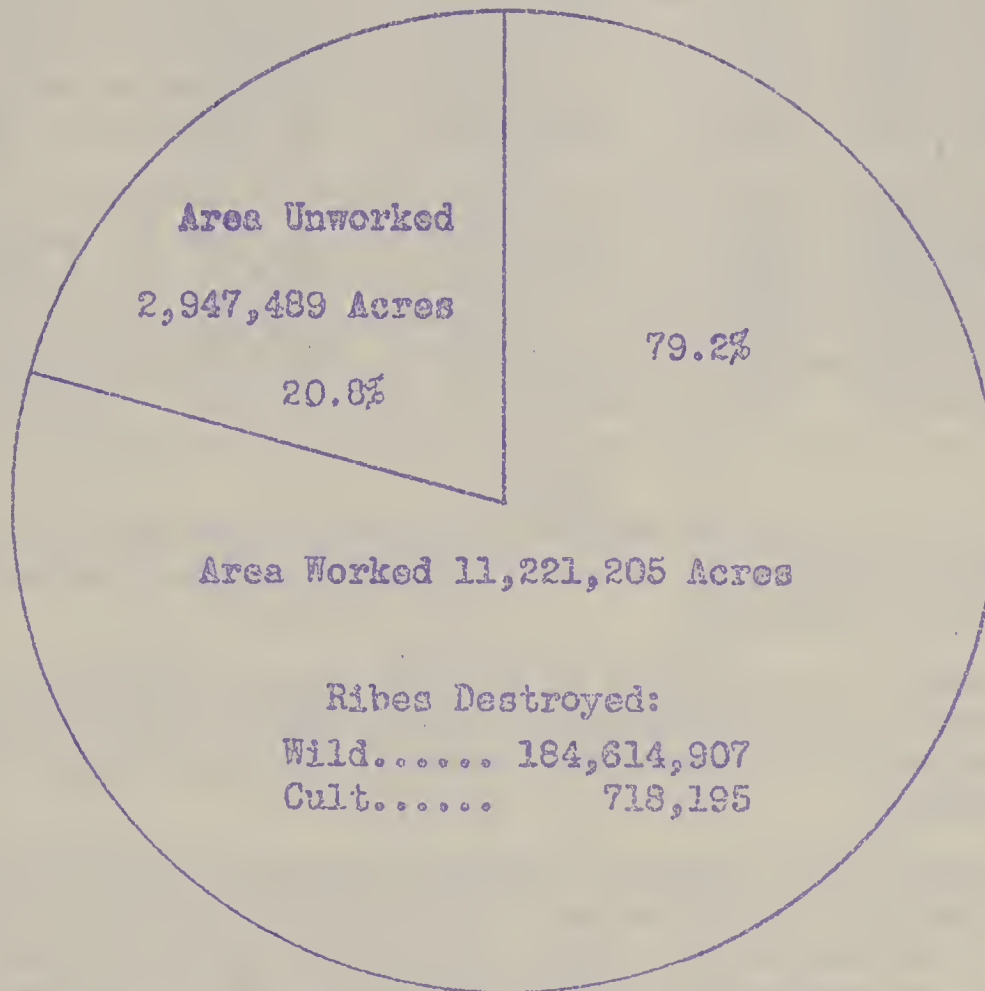
Basis

The acreages now needing re-examination for Ribes and the man days required to do the work were compiled from township estimates submitted by the state or district blister rust control leaders.

STATUS OF INITIAL RIBES ERADICATION WORK IN NORTHEASTERN STATES
DECEMBER 1953

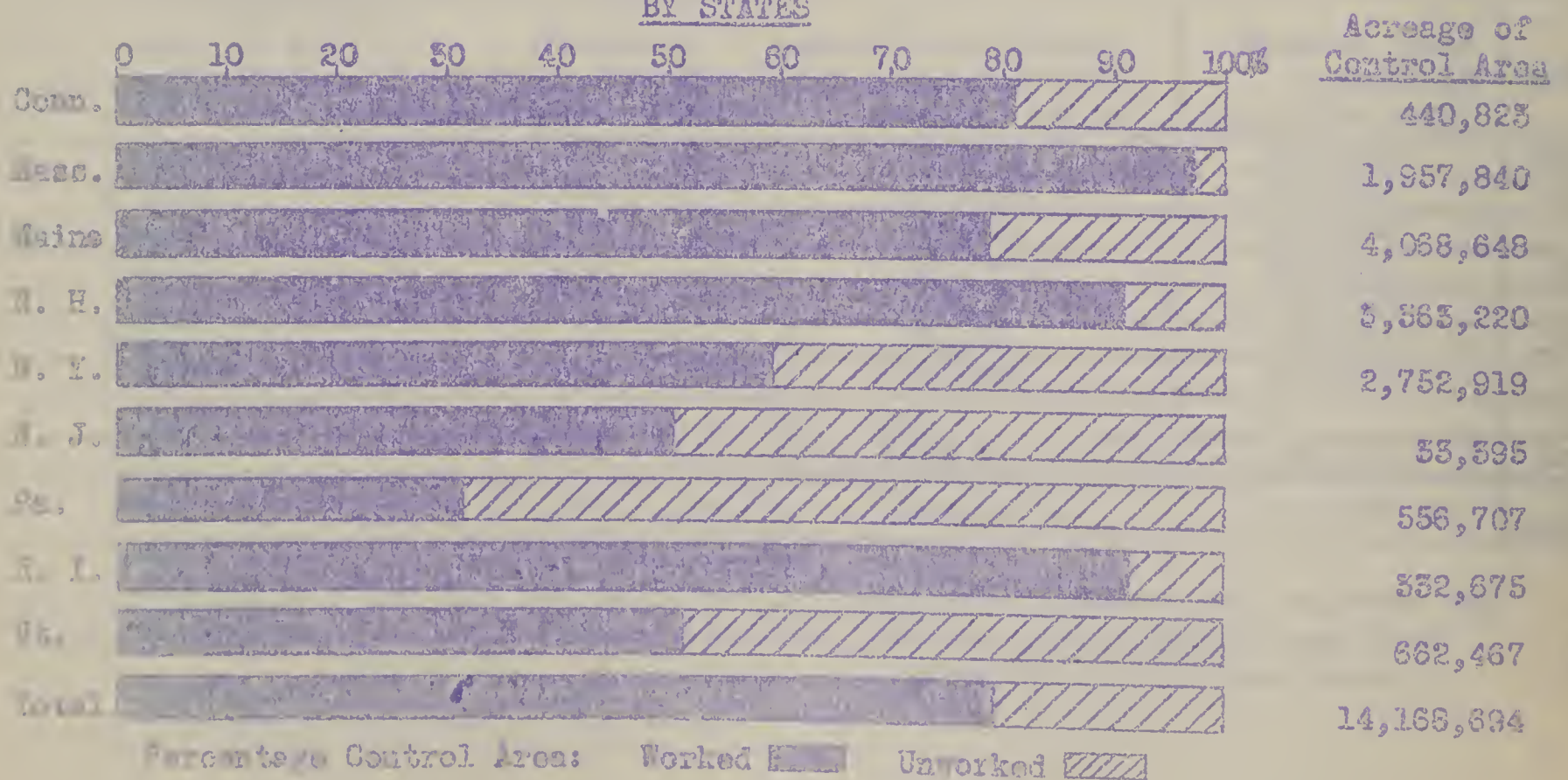
(Excludes Special Nursery Sanitation and Black Current Elimination Work)

ALL STATES



Total Control Area - 14,168,694 Acres

BY STATES



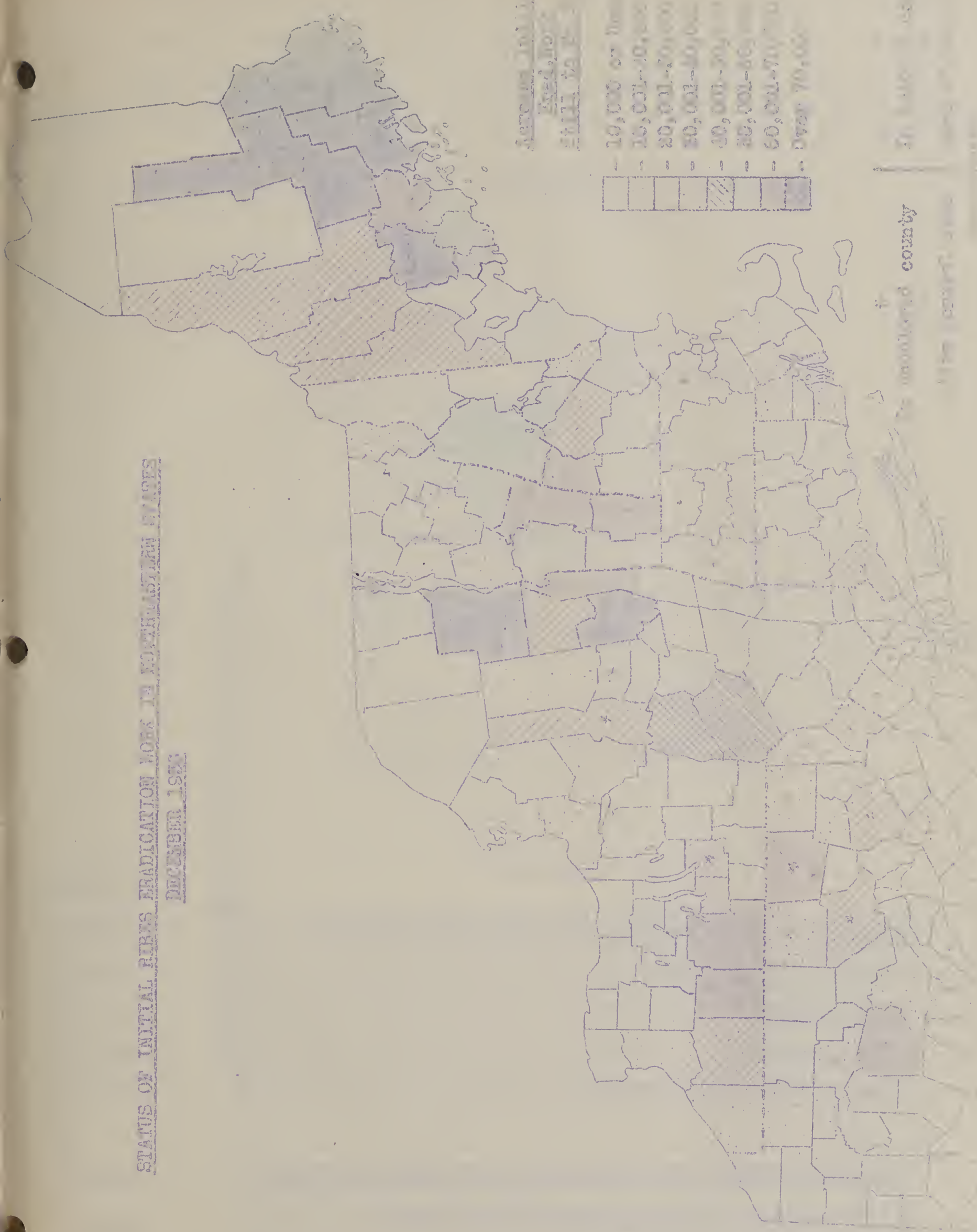
STATUS OF INITIAL RIBS ERADICATION WORK IN NORTH-EASTERN STATES

DECEMBER 1951

Percentage Initial Ribs Eradicated

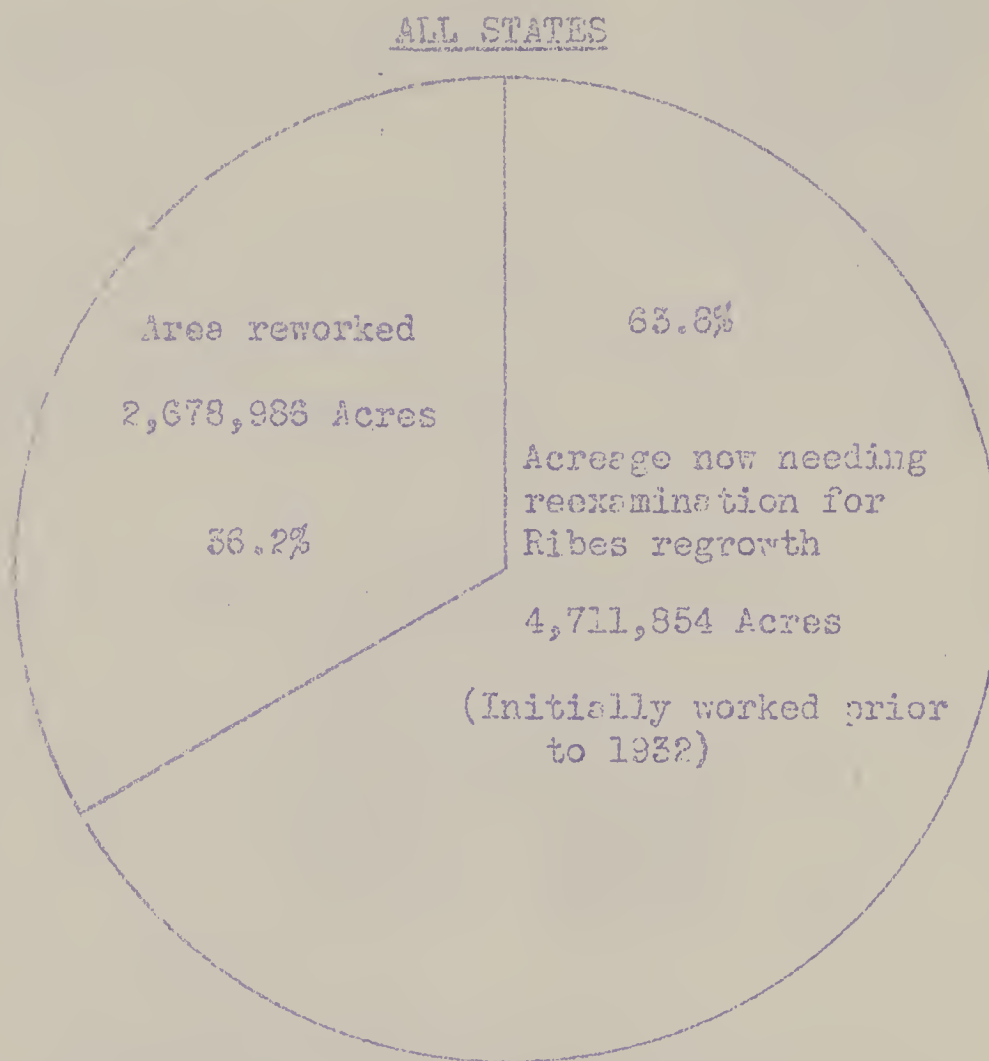
10,000 or more	10,001-20,000	20,001-30,000	30,001-40,000	40,001-50,000	50,001-60,000	60,001-70,000	Over 70,000
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in unincorporated county

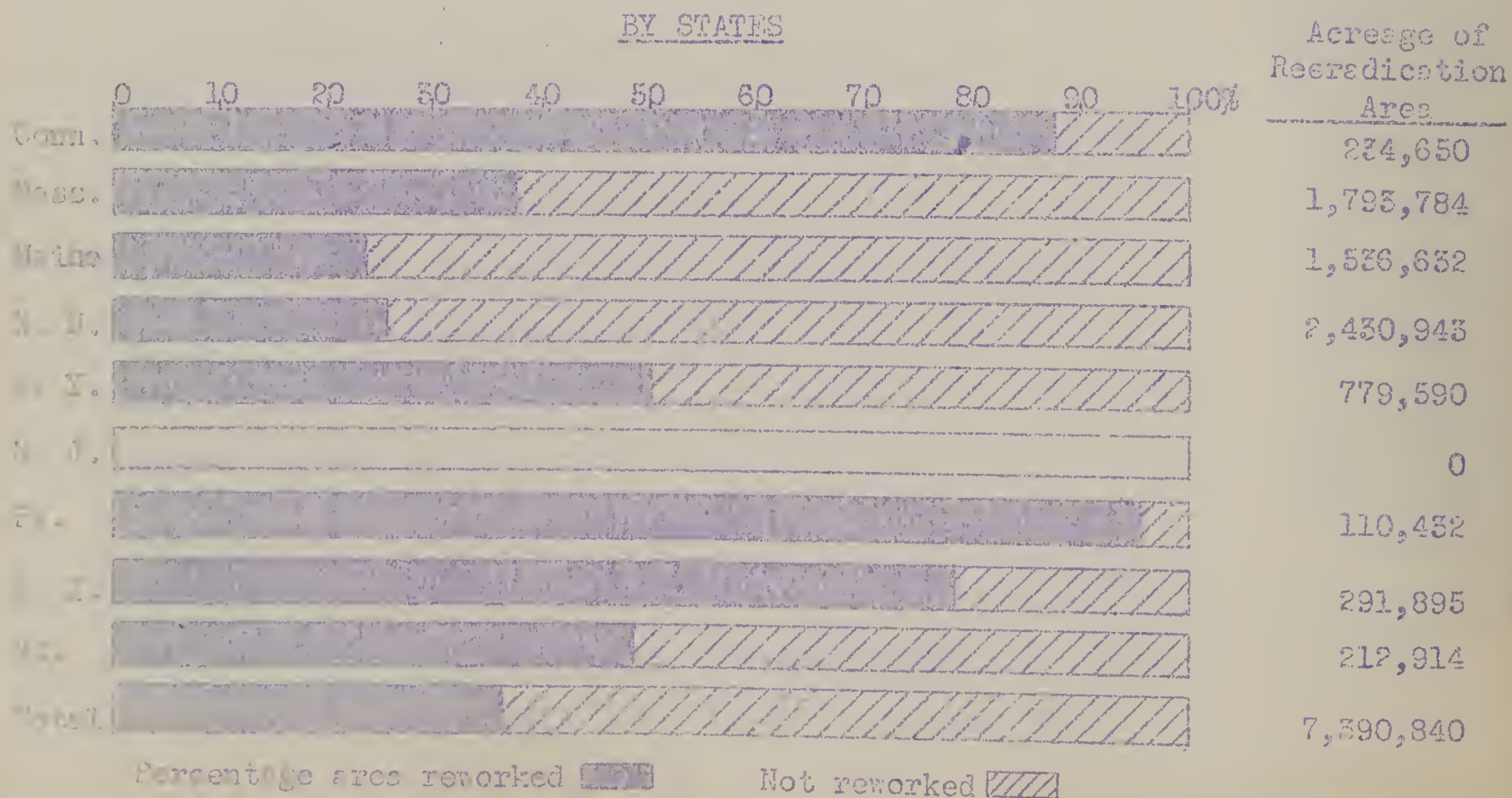


includes Special Nursery Cultivation and Black Current Elimination Projects)

The reeradication area is based on the total acreage reworked for Ribes during the period 1918-1966, inclusive, plus the acreage needing reexamination at the end of 1966.



Reeradication Area - 7,390,840 Acres



ACREAGE NOW NEEDING REEXAMINATION FOR RIBES
IN RESPECTIVE COUNTIES OF THE NORTHEASTERN STATES

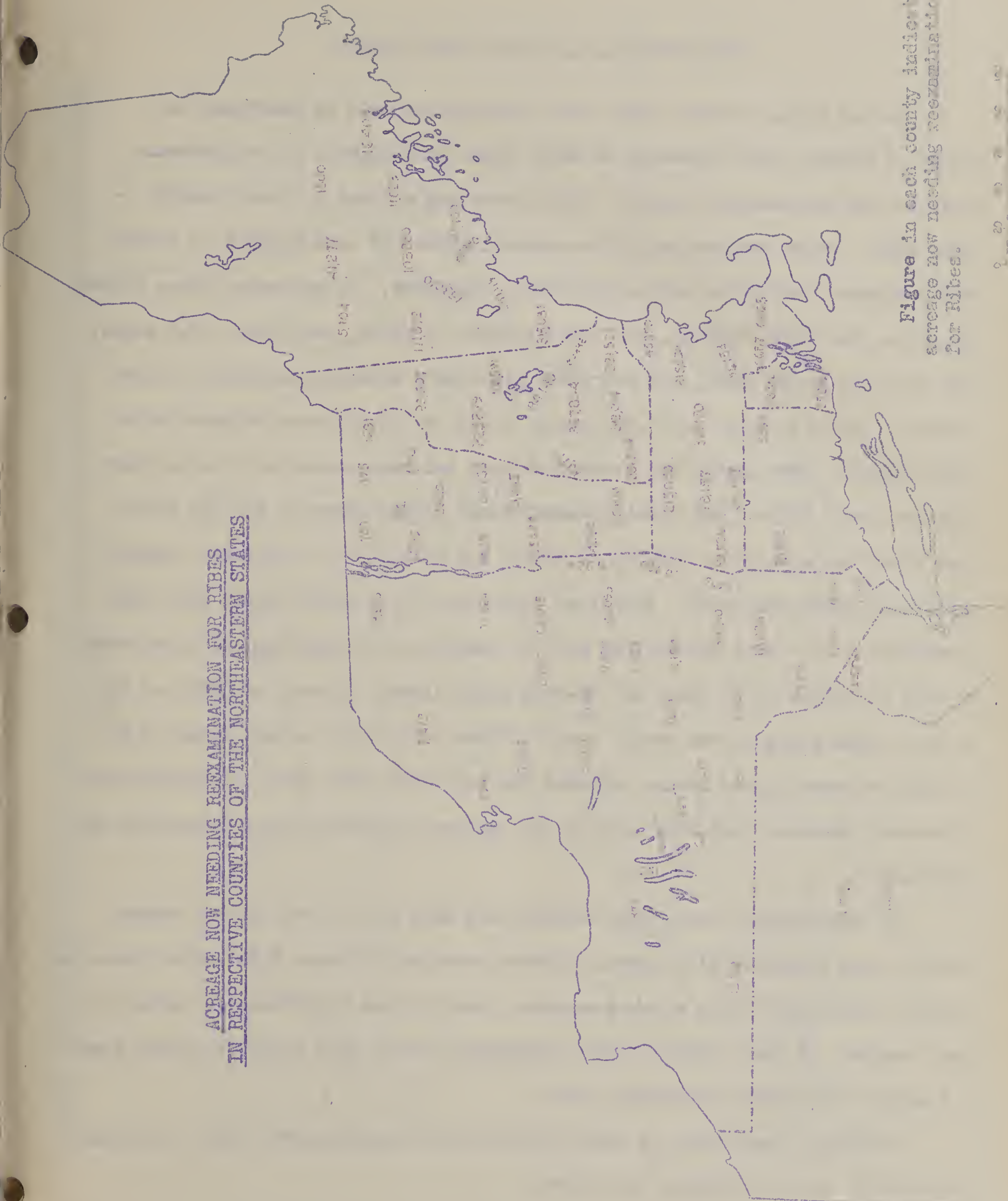


Figure in each county indicates acreage now needing reexamination for Ribes.

0 20 40 60 80 100

-145-

Effectiveness Of Blister Rust Control

During 1934, plot and strip line studies were made to determine the amount of blister rust infection on white pines in protected and unprotected areas in the Northeastern States. The disease had existed in these tracts since 1914. Ribes eradication in the control areas had been limited to initial work performed during the period 1923-1930, inclusive. In protected areas in New Hampshire, New York, Vermont, and Pennsylvania, 37 plots, comprising 72.6 acres, were laid out in 26 towns, and the white pines were examined carefully for infection. Out of a total of 19,835 pines, 4,435, or 22.4%, were infected with 9096 cankers. Even though the protection work had been conducted 4 to 11 years previous, only 2.2% of the total diseased trees became infected for the first time after the areas were cleared of Ribes, and only 2.2% of the total cankers originated after that time. Infection conditions in protected areas were also determined in 23 towns in New York and New Hampshire by examining all pines under 20 feet in height on 13 miles of rod-wide strip lines. A total of 5530, or 35% of the 15,808 pines on the strips were infected with 7,847 cankers. Only 1.8% of these diseased pines became infected for the first time after the application of control measures, and only 2.3% of the cankers originated since protection was established.

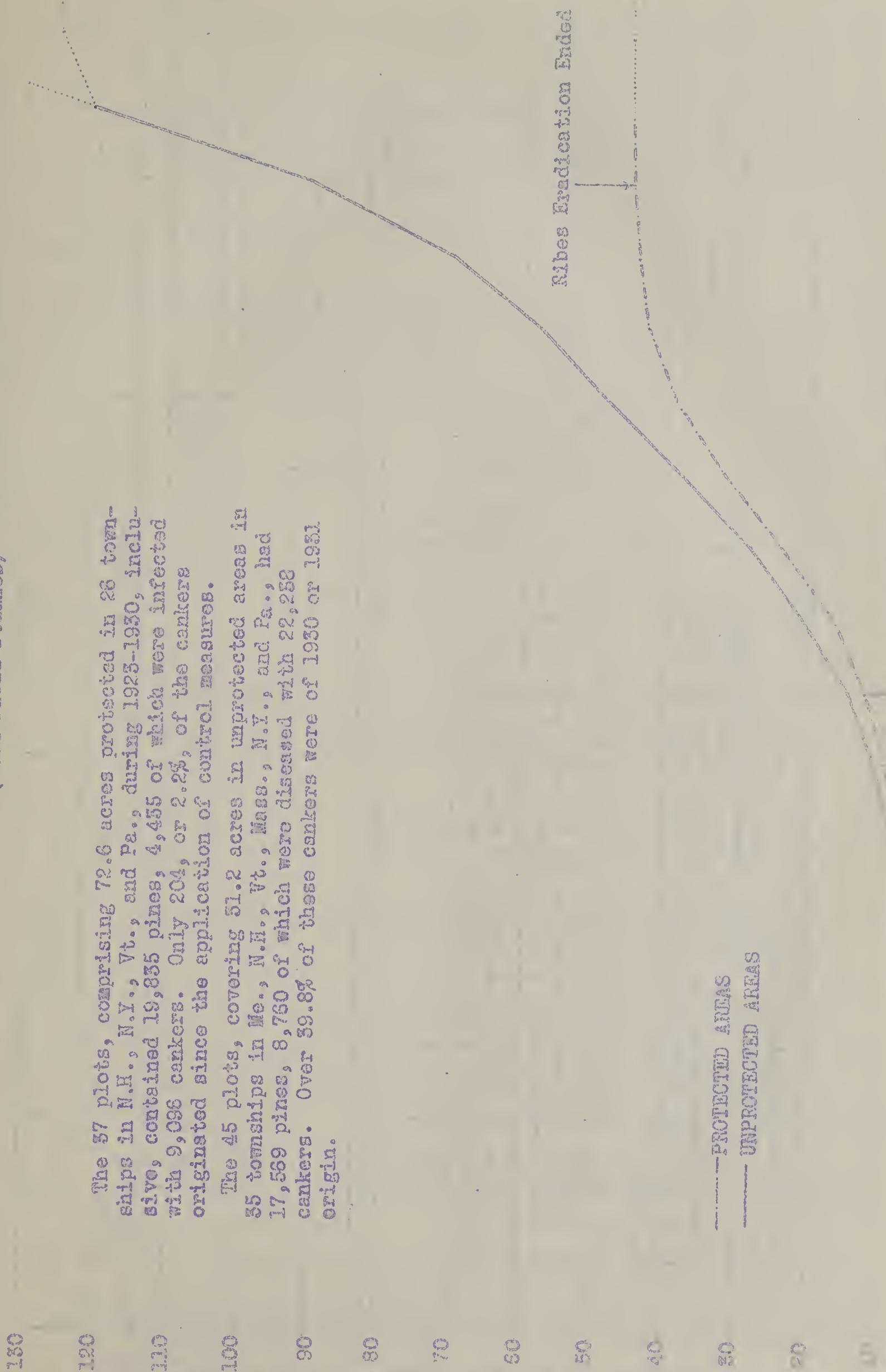
In unprotected areas, plot studies were made in 35 towns in six states. The 45 plots comprised 31.2 acres. Blister rust had infected 8,760 white pines, or 49.9% of the 17,569 trees of this species. Most of the 22,238 cankers were of recent origin. In fact, 39.8% of them originated during 1930 and 1931, which shows the danger of delaying protection work.

Infection conditions on these protected and non-protected areas are shown graphically in the following two charts.

BLISTER RUST INFECTION ON WHITE PINES IN PROTECTED AND UNPROTECTED AREAS IN NORTHEASTERN STATES (1934 Field Studies)

The 37 plots, comprising 72.6 acres protected in 28 townships in N.H., N.Y., Vt., and Pa., during 1923-1930, inclusive, contained 19,835 pines, 4,455 of which were infected with 9,098 cankers. Only 204, or 2.2%, of the cankers originated since the application of control measures.

The 45 plots, covering 51.2 acres in unprotected areas in 35 townships in Me., N.H., Vt., Mass., N.Y., and Pa., had 17,569 pines, 8,760 of which were diseased with 22,258 cankers. Over 39.8% of these cankers were of 1930 or 1931 origin.



1934 Field Studies

The 1934 examinations include plot and strip line studies made in areas protected during 1923-1930, inclusive. The 57 plots, comprising 72.6 acres, were located in 26 townships in N.H., Vt., N.Y. and Pa. These plots contained 19,855 white pines, 4,435 of which were infected with 9,096 cankers. Only 2.2% of the total diseased trees became infected for the first time after the areas were cleared of Ribes, and only 2.2% of the total cankers originated after that time.

The strip lines, one rod wide by 15 miles in length, were run through parts of 23 townships in N.H. and N.Y. A total of 15,808 pines were examined on the strips; 5,530 of the trees were infected with 7,847 cankers. Only 1.8% of these diseased pines became infected for the first time after the application of control measures, and only 2.3% of the cankers originated since protection was established.

Strip Line Studies

Plot Studies

NUMBER OF YEARS AFTER ERADICATION

1 Year of Ribes Eradication

NUMBER OF YEARS BEFORE ERADICATION

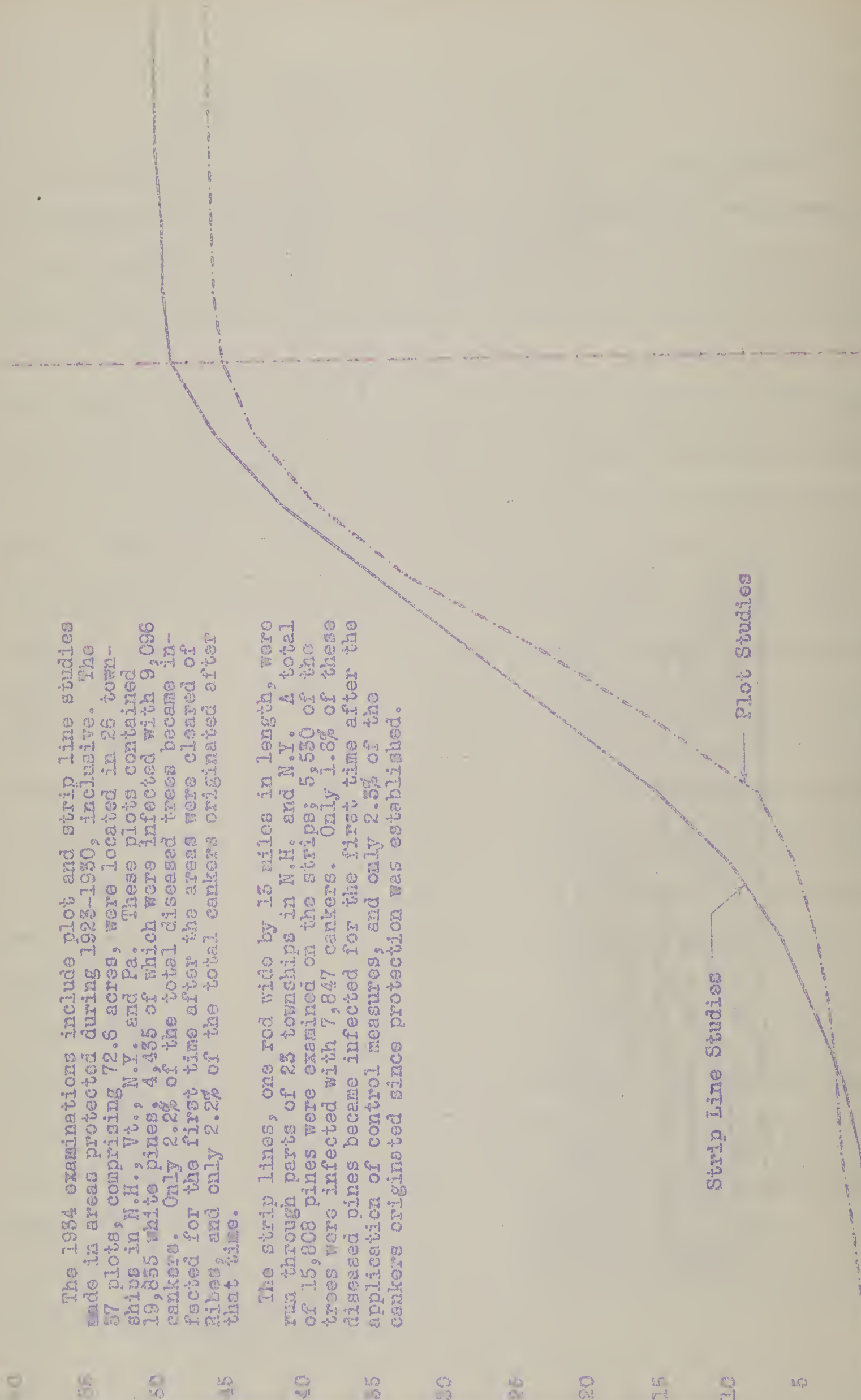


Table 94 - Summary of Nursery Sanitation Work under All Programs in Northeastern States
During Period 1930-1936, Inclusive

By States

State	Type of Ered.	Acreage Examined	Ribes Pulled		Total Men Days	Local Coop.	Cost					Total	Per Acre	
			Wild	Cult			State	B.P.I.	P.W.A.	E.C.W.	W.P.A.	S.C.S.	Cost	Ribes Days
Maine	Initial	206	103,516	22	163	\$ 324.45	\$ 198.20	-	-	-	-	-	522.65	502.5
	Reerad.	882	10,631	-	243	156.18	184.60	-	461.25	68.83	-	-	870.86	12.1
	Total	1,088	114,147	22	406	480.63	382.80	-	461.25	68.83	-	-	1,393.51	104.9
N.H.	Initial	-	-	-	-	-	-	-	-	-	-	-	-	-
	Reerad.	1,505	7,755	-	262	172.28	508.71	-	-	-	399.00	-	879.99	5.2
	Total	1,505	7,755	-	262	172.28	508.71	-	-	-	399.00	-	879.99	5.2
Vt.	Initial	-	-	-	-	-	-	-	-	-	-	-	-	-
	Reerad.	2,230	4,839	75	409	-	957.91	-	-	108.00	218.27	-	1,284.18	2.2
	Total	2,230	4,839	75	409	-	957.91	-	-	108.00	218.27	-	1,284.18	2.2
Mass.	Initial	723	30,369	112	139	140.80	212.79	10.00	195.34	-	-	-	558.93	42.0
	Reerad.	3,956	4,405	179	813	89.20	2,622.34	-	-	-	822.90	-	3,534.44	1.1
	Total	4,679	34,774	291	952	230.00	2,835.13	10.00	195.34	-	822.90	-	4,093.37	7.4
R.I.	Initial	1,190	133	520	158	-	343.56	162.87	-	-	-	-	506.43	0.1
	Reerad.	9,534	4,728	182	182	-	755.62	-	150.00	102.29	-	-	1,007.91	0.5
	Total	10,724	4,861	702	340	-	1,099.18	162.87	150.00	102.29	-	-	1,514.34	0.5
Conn.	Initial	7,157	5,839	152	278	204.32	352.69	139.92	120.00	65.28	-	-	882.21	0.8
	Reerad.	45,156	9,499	878	1,898	557.04	3,034.44	610.87	677.80	952.68	159.35	-	6,022.18	0.2
	Total	50,313	15,338	1,030	2,176	761.36	3,417.13	750.79	797.80	1,017.96	159.35	-	6,904.39	0.3
N.Y.	Initial	3,110	26,017	634	382	5.60	1,219.95	-	-	-	-	-	1,225.55	3.4
	Reerad.	61,853	120,275	1,208	5,052	207.07	13,266.44	-	2,490.75	255.50	1,093.25	-	17,313.01	1.9
	Total	64,963	146,292	1,842	5,434	212.67	14,486.39	-	2,490.75	255.50	1,093.25	-	18,538.56	2.5
N.J.	Initial	795	2,000	114	109	-	99.45	-	-	-	-	228.00	327.45	2.5
	Reerad.	620	619	-	9	-	54.47	22.50	3.33	-	-	-	60.30	1.0
	Total	1,415	2,619	114	118	-	153.92	22.50	3.33	-	-	228.00	387.75	1.9
Pa.	Initial	3,808	38,460	466	324	233.70	588.43	36.80	284.55	-	-	-	1,123.48	10.1
	Reerad.	5,566	46,546	31	1,925	97.75	2,525.66	-	-	1,464.79	238.02	-	4,326.22	8.4
	Total	9,375	85,006	497	2,249	331.45	3,114.09	36.80	284.55	1,464.79	238.02	-	5,449.70	9.7
Total	Initial	16,990	206,334	2,020	1,553	908.87	3,015.07	349.59	579.89	65.28	-	228.00	5,146.70	12.1
	Reerad.	129,330	209,297	2,553	10,794	1,279.52	23,720.19	633.37	3,783.13	2,952.09	2,930.79	-	35,290.09	1.6
	Total	146,320	415,631	4,573	12,347	2,188.39	26,735.26	982.96	4,363.02	3,017.37	5,860.79	228.00	40,445.79	2.9

*Town funds -- balance of expenditures under heading "Local Cooperation" all individual funds.

By Years

Year	Type of Erad.	Acreage Examined	Ribes Pulled		Total Man Days	Cost		W.P.A.	E.C.W.	S.C.S.	Total	Cost/Day
			Wild	Cult.		Local Coop.	State					
1930	Initial	4,973	110,704	182	447	528.77	905.19	-	-	-	-1,433.96	.288
	Re-Erad.	20,752	59,542	643	1,490	568.89	4,198.33	-	-	-	-4,767.22	.250
	Total	25,725	170,246	825	1,937	1097.66	5,103.52	-	-	-	-6,201.18	.241
1931	Initial	3,048	6,117	55	120	5.60	240.36	159.92	-	-	-335.88	.127
	Re-Erad.	26,776	26,126	1086	1,671	117.69	4,863.42	372.50	-	-	-5,553.61	.200
	Total	29,824	32,243	1141	1,791	123.29	5,103.78	512.42	-	-	-5,739.49	.192
1932	Initial	4,759	16,478	1222	555	50.65	1,588.32	172.87	-	-	-1,811.84	.381
	Re-Erad.	12,903	12,543	60	1,247	163.25*	3,828.15	5.33	-	-	-3,996.72	.310
	Total	17,662	29,021	1282	1,812	213.89	5,416.47	178.20	-	-	-5,808.56	.329
1933	Initial	1,574	21,642	32	130	59.40	196.95	36.80	264.55	-	-557.70	.354
	Re-Erad.	18,662	36,643	368	1,713	331.95**	4,608.74	255.54	709.40	-	-5,905.63	.316
	Total	20,236	58,285	400	1,843	391.35	4,805.69	292.34	264.55	709.40	-6,463.33	.319
1934	Initial	2,293	48,247	144	162	217.55	7.00	-	315.34	65.28	-605.17	.264
	Re-Erad.	18,144	30,642	62	1,904	-	2,432.22	-	3,066.50	796.84	-6,295.56	.347
	Total	20,437	78,889	206	2,066	217.55	2,439.22	-	3,381.84	862.12	-6,900.73	.338
1935	Initial	148	1,608	320	27	46.90	-	-	-	-	-46.90	.317
	Re-Erad.	18,489	30,513	179	1,269	34.75	1,987.27	-	716.63	849.93	-3,538.58	.194
	Total	18,637	32,121	499	1,296	81.65	1,987.27	-	716.63	849.93	-3,635.48	.195
1936	Initial	195	1,538	65	102	-	77.25	-	-	228.00	-305.25	.157
	Re-Erad.	13,604	13,288	155	1,500	63.00	1,802.06	-	-	595.92	-5,391.77	.396
	Total	13,799	14,826	220	1,602	63.00	1,879.31	-	-	595.92	-5,697.02	.413
Totals	Initial	16,990	206,334	2,020	1,553	908.87	3,015.07	349.59	579.89	65.28	-228.00	.303
	Re-Erad.	129,330	209,297	2,553	10,794	1,279.52	23,720.19	633.37	3,783.13	2,952.09	-35,299.09	.273
	Total	146,320	415,631	4,573	12,347	2,188.39	26,735.26	982.96	4,363.02	3,017.37	-40,445.79	.276

*Includes \$7.73 town funds. **Includes \$148.15 town funds. Balance of expenditures under heading "Local Cooperation" all individual funds.

Table 96 - Status of Nursery Sanitation Work in Northeastern States December, 1936

State	Nurseries Where Protection Established and Being Maintained				Maximum Acreage of Control Areas	No. Nurseries Protected During 1936	No. White Pines Existing During 1936 in Nurseries Protected That Year
	Number						
	Federal	State	Private	Total			
Maine	-	1	1	2	409	1	300,000
N.H.	-	1	2	3	670	1	2,000,000
Vt.	-	1	-	1	700	1	520,000
Mass.	-	4	4	8	3,225	2	591,150
R.I.	-	-	5	5	2,453	5	1,600
Conn.	-	1	10	11	3,766	11	1,210,845
N.Y.	2	5	1	8	11,207	4	40,050,000
N.J.	1	1	-	2	795	1	660,000
Penna.	-	4	5	9	5,084	3	5,272,000
Totals	3	18	28	49	28,309	32	50,605,595

Twenty two other nurseries in the Northeastern States established sanitation zones, but abandoned them prior to 1936 for various reasons.

A few additional private nurseries in Pennsylvania will apply protective measures during the spring of 1937.

Table 97 - Special Ribes Nigrum Elimination Work Conducted Under All Programs In Northeastern States, 1913-1936, Inclusive

State	Mass.	R.I.	Conn.	N.Y.	Totals
Properties Inspected	622,425	110,137	318,344	523,400	1,574,306
Patches Located	6,077	1,917	32,695	5,102	45,791
Nigrum	40,627*	16,219	7,464	36,930	101,240
Other Cult.	-	1,093	42,397	761	44,251
Total	40,627	17,312	49,861	37,691	145,491
Man Days	6,594	1,929	14,610	5,142	28,275
Indiv.	3,271.80	-	-	-	3,271.80
Towns	-	-	901.00	-	901.00
State	20,409.85	9,178.55	3,110.99	27,277.37	59,976.76
B.P.I.	100.00	675.53	3,647.42	-	4,422.95
P.W.A.	550.04	473.80	1,915.05	31.50	2,970.39
E.C.W.	-	-	218.40	-	218.40
W.P.A.	1,712.75	-	-	-	1,712.75
C.W.A.	2,688.11	-	5,938.10	-	8,626.21
E.R.A.	-	-	59,568.50	-	59,568.50
Total	28,732.55	10,327.88	75,299.46	27,308.87	141,668.76

* Includes 556 bushes pulled in connection with special black currant elimination project around nurseries in 1925 and 1926 at a cost of \$367.89 to the state.

Table 98 - Status of Ribes Nigrum Elimination Work in Northeastern States December 31, 1936

State	Years Work Performed	Total Number Townships In State	No. Townships Where Black Currant Elimination Work Completed	No. Townships Where Black Currants Partially Completed	No. Townships Where Black Currants Located But Not Eradicated
Mass.	1930-1936, Incl.	355	346*	-	1
R.I.	1929-1933, Incl.	39	39	-	-
Conn.	1930-1935, Incl.	169	169	-	-
N.Y.	1928-1936, Incl.	1012	225	50	-
Totals	-	1575	779	50	1

* Nine additional townships on the islands adjacent to the mainland will not be worked.

In conjunction with the regular control activities in the other Northeastern States, such bushes have been eradicated in the worked portions of the control areas. Few Ribes nigrum have been found in these latter states.

Table 99 - Blister Rust Canker Elimination Work Under All Programs
In Northeastern States, 1918-1936, Inclusive.

State		Maine	Vt.	Mass.	N.Y.	Penna.	Totals
Period work performed		1932-36	1935-36	1933-34	1935-36	1934-36	1932-36
Est. No. pines examined		132,271	31,500	4,648,000	349,208	460,516	5,621,495
No. fatally inf. pines cut down		9,025	1,244	17,303	70,070	27,588	125,230
No. pines treated for infection		18,880	2,471	12,784	50,285	74,642	159,062
No. cankers removed	Branch	40,662	2,540	17,511	61,966	452,436	575,115
	Stem	3,896	42	-	-	-	3,938
Total man days		2,349	483	5,409	4,443	4,228	16,912
Cost	Individuals	1055.12	-	-	-	-	1055.12
	Park Service	321.04	-	-	-	-	321.04
	E. C. W.	3291.61	-	-	-	7579.33	10,870.94
	W. P. A.	-	1538.80	-	17,550.14	-	19,088.94
	C. W. A.	-	-	24,255.74	-	-	24,255.74
	Total	4667.77	1538.80	24,255.74	17,550.14	7579.33	55,591.78

Table 100 - Fire and Control Area Mapping Conducted Under All Projects
in Northeastern States During Period 1933-1936, Inclusive

(By States)

State	Period	Acreage Mapped	Acreage Examined But Not Mapped	Miles Boundary Lines Painted	Man Days	Towns	State	Cost			
								E.C.W.	P.W.A.	W.P.A.	E.R.A. & C.W.A.
Maine	1933-35	617,780	767,865	329	5,592	-	-	1,314.43	16,653.54	6,538.14	9,414.39
	1936	522,343	1,081,040	1,312	6,876	-	-	1,513.39	-	29,153.26	-
	Total	1,140,123	1,848,905	1,641	12,468	-	-	2,827.82	16,653.54	6,538.14	38,567.65
N. H.	1933-35	229,525	2,740	-	4,995	-	-	1,244.00	6,624.76	9,443.25	8,470.74
	1936	316,429	48,485	-	7,025	-	-	18.32	2,138.45	28,151.92	-
	Total	545,954	51,226	-	12,021	-	-	1,262.32	8,763.21	9,443.25	36,622.66
N. J.	1933-35	229,114	253,181	-	2,418	-	-	1,214.87	3,288.88	1,946.18	5,395.77
	1936	435,109	526,480	415	4,679	-	-	-	207.37	18,963.17	-
	Total	664,223	779,661	415	7,097	-	-	1,214.87	3,496.25	1,946.18	24,359.94
N. M.	1933-35	90,290	66,080	105	2,100	144.60	-	-	-	2,898.14	3,914.75
	1936	162,623	175,671	249	3,069	801.00	588.17	-	-	13,920.79	-
	Total	252,913	241,751	354	5,169	945.60	588.17	-	-	2,898.14	17,835.54
N. Y.	1933-35	105,112	-	-	931	-	-	254.05	3,420.38	2,009.28	380.75
	1936	77,790	-	-	945	-	-	566.20	3,628.82	-	1,756.13
	Total	180,904	-	-	1,876	-	-	820.25	7,049.20	2,009.28	2,136.88
Penn.	1933-35	303,833	2,438,180	-	4,753	-	-	129.14	827.60	568.10	339.42
	1936	52,149	30,851	119	1,355	445.70	557.24	-	-	6,986.97	-
	Total	355,982	2,469,031	119	6,108	445.70	686.38	827.60	827.60	568.10	22,211.70
Vt.	1933-35	663,222	397,485	904	6,280	-	-	3,456.00	252.00	14,559.60	12,745.62
	1936	553,457	315,570	1,475	6,671	-	-	2,012.32	426.00	-	35,397.46
	Total	1,216,659	713,055	2,379	12,951	-	-	5,468.32	678.00	14,559.60	48,143.08
W. Va.	1933-35	201,505	-	1,447	14,901	-	-	-	45,674.01	1,266.87	6,276.84
	1936	192,529	-	1,805	11,586	-	-	-	26,210.40	-	22,291.65
	Total	394,034	-	3,252	26,487	-	-	-	71,884.41	1,266.87	28,568.49
Totals	1933-35	2,438,383	3,925,531	2,785	41,971	144.60	7,612.49	76,741.17	39,229.56	46,939.28	25,323.95
	1936	2,312,409	2,178,098	5,375	42,206	1,246.70	5,255.64	32,611.04	-	156,621.35	-
	Total	4,750,792	6,103,629	8,160	84,177	1,391.30	12,868.13	109,352.21	39,229.56	203,560.63	25,323.95

*Includes \$405.00 B.E. & P.Q. funds.

** " 2,851.57 W.P.A. funds spent on state W.P.A. project.

In Pennsylvania, several hundred thousand additional acres were eliminated, but no definite record was kept.

Table 101 - Pine and Control Area Mapping Conducted Under All Programs
In Northeastern States During Period 1933-1936, Inclusive

(By Programs)

Programs	Period	Acreage Mapped	Acreage Examined But Not Mapped	Miles Boundary Lines Painted	Man Days	Cost				E.R.A. & C.W.A.	Total
						Towns	State	E.C.W.	P.W.A.		
Regular	1933-35	174,292	104,975	-	1,142	-	5,360.98	-	-	-	5,360.98
	1936	46,880	8,750	-	270	-	1,296.00	-	-	-	1,296.00
	Total	221,172	113,725	-	1,412	-	6,656.98	-	-	-	6,656.98
E.C.W.	1933-35	643,670	298,951	967	18,180	-	189.59	76,741.07	-	-	76,930.66
	1936	104,222	11,561	457	8,655	-	-	32,611.04	-	-	32,611.04
	Total	747,892	310,512	1,424	26,835	-	189.59	109,352.21	-	-	109,541.80
P.W.A.	1933-35	744,663	942,528	227	6,915	-	1,025.28	-	39,229.56	-	40,254.84
	1936	-	-	-	-	-	-	-	-	-	-
	Total	744,663	942,528	227	6,915	-	1,025.28	-	39,229.56	-	40,254.84
Federal W.P.A.	1933-35	616,026	405,569	1,591	10,937	144.60	1,036.64	-	46,939.28	-	48,120.52
	1936	2,124,601	2,157,787	4,918	32,701	1206.00	3,927.96	-	153,769.78	-	158,905.74
	Total	2,740,627	2,563,356	6,509	43,638	1350.60	4,964.60	-	200,709.06	-	207,024.26
E.R.A.	1933-35	213,971	2,139,370	-	4,205	-	-	-	-	22,211.70	22,211.70
	1936	-	-	-	-	-	-	-	-	-	-
	Total	213,971	2,139,370	-	4,205	-	-	-	-	22,211.70	22,211.70
C.W.A.	1933-35	45,761	34,138	-	592	-	-	-	-	3,112.25	3,112.25
	1936	-	-	-	-	-	-	-	-	-	-
	Total	45,761	34,138	-	592	-	-	-	-	3,112.25	3,112.25
State W.P.A.	1933-35	-	-	-	-	-	-	-	-	-	-
	1936	36,706	-	-	580	40.70	31.68	-	2,851.57	-	2,923.95
	Total	36,706	-	-	580	40.70	31.68	-	2,851.57	-	2,923.95
Totals	1933-35	2,458,383	3,925,531	2,785	41,971	144.60	7,612.49	76,741.07	39,229.56	46,939.28	195,931.00
	1936	2,512,409	2,178,098	5,375	42,206	1,246.70	5,255.64	32,611.04	156,621.35	-	195,754.73
	Total	4,970,792	6,103,629	8,160	84,177	1,391.30	12,868.13	109,352.21	39,229.56	203,560.63	393,685.73

*Includes \$405.00 B.E. & P.Q. funds.

Table 102 - Status of Pine and Control Area Mapping in Northeastern States

December, 1936.

State	No. Townships			Est. No. Eight Hour		Man Days To Complete Mapping
	Completed	Partially Completed	No Work Done But Desirable	Townships Where Such Work is Needed	Townships Where need for Such Work is Questionable	
Maine	141	43	289	21,001	-	-
N. H.	14	118	91	44,076	-	-
Vt.	57	16	114	8,181	-	-
Mass.	92	150	42	18,703	-	-
R. I.	7	5	-	523	-	-
Conn.	124	29	-	2,661	-	-
N. Y.	140	61	418	14,947	-	4,803
N. J.	-	-	-	-	-	-
Penna.	73	242	87	10,160	-	14,281
Totals	648	664	1041	120,252	-	19,084

(1) Due to excessive amount of protection zone required to protect small units of pine.

STATUS OF WHITE PINE AND CONTROL AREA MAPPING
IN THE NORTHEASTERN STATES - DECEMBER 31, 1956

Legend

- Pine and control area mapping completed
- Pine and control area mapping partly completed
- No mapping work performed
- General woodland mapping completed, but no pine and control area mapping performed

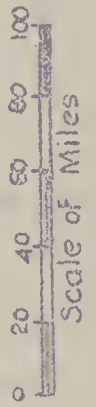
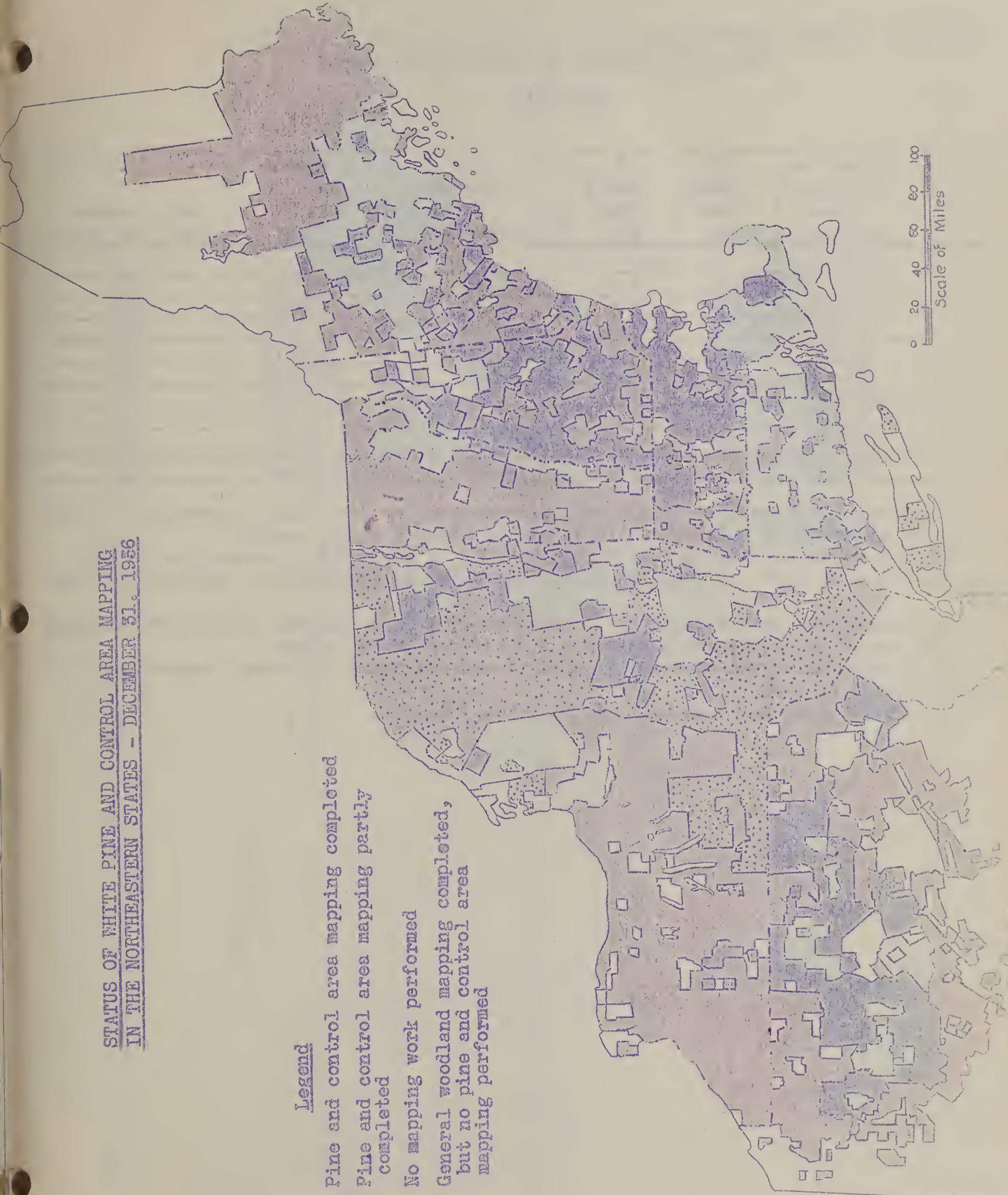


Table 102 - State Compensation Paid For Cultivated Ribes Destroyed
Under All Programs In Northeastern States

1918-1936

	Total No. Cultivated Ribes Destroyed	No. Bushes Paid For	% Bushes Paid For	No. Persons Paid Compensation	Amount Paid in Reimburse- ment	Ave. Amount Paid Per Bush
State	143,256	-	-	-	-	-
Ill.	151,009	2,008	1.3	63	550.60	.274
Ind.	13,952	1,646	11.8	133	792.91	.482
Ohio	311,399	41,796	13.4	662	14,886.65	.356
Pa.	39,219	1,410	3.6	58	509.79	.362
W. Va.	85,134	175	0.2	16	103.50	.591
W. Va.	150,927	16,100	10.7	1,143	5,525.04	.343
W. Va.	1,827	-	-	-	-	-
W. Va.	31,952	335	1.0	53	151.00	.451
Total	928,675	63,470	6.8	2,128	22,519.49	.355

The Vermont data include \$86.25 compensation paid by individual cooperators in 1926 and 1933 to 10 owners of cultivated Ribes for the removal of 181 bushes.

The Massachusetts data include \$5,655.05 paid in 1918 to 253 persons for 16,517 bushes destroyed in 1917 and 1918, mostly in 1917. It is impossible to separate the 1917 data.

The Connecticut data include \$76.25 paid in 1930 by individual cooperators (nurserymen) to 12 owners of cultivated bushes for the removal of 114 bushes.

The Pennsylvania data represents payments made by three individual cooperators (nurserymen) during 1936.

No federal money has been paid for Ribes compensation.

Table 103 - Total Cost of All Cooperative Blister Rust Control Activities, By Projects, In The Northeastern States During Period 1918-1936, Inclusive.

State	Supervision and BRCAA	Ribes Eradication	Eradication Assistants and Checkers	Black Current Elimination	Nursery Sanitation	Ribes Comp.	Treatment Diseased Pines	Pre-Eradication Survey	Field Data and Misc.	Total
Maine	299,387.59	726,286.29	82,144.32	-	10,893.51(1)	-	4,667.77	64,587.15	24,901.00	1,212,867.60
N.H.	472,083.41	1,000,992.31	88,079.83	-	879.99	550.60	-	56,091.44	55,080.73	1,673,738.31
Vt.	151,203.03	306,825.24	25,251.53	-	1,284.18	792.91	1,538.80	31,017.24	25,953.57	543,853.50
Mass.	336,505.14	521,907.98	17,123.73	28,732.55	4,608.22(1)	14,886.65	24,255.74	25,379.70	50,990.64	1,024,590.31
N.Y.	50,579.87	119,968.02	19,525.05	10,327.88	1,514.34	509.79	-	12,015.61	9,242.69	223,605.11
Conn.	121,598.91	227,941.13	35,471.05	75,299.46	6,904.39	103.50	-	32,065.87	88,242.71	587,627.01
N.Y.	511,367.07	1,719,172.89	257,817.99	27,308.87	18,538.56	5,525.04	20,263.30	68,849.00	270,702.30	2,899,645.01
N.J.	19,977.67	5,284.35	1,346.33	-	612.11(3)	-	-	-	4,559.08	31,772.53
Penns.	87,337.02	575,052.62	114,663.59	-	5,449.70	151.00	7,579.33	101,719.77	10,755.14	902,632.11
Totals	2,050,039.51	5,203,430.81	641,423.42	141,688.76	50,685.00	22,519.49	58,304.94	391,725.78	540,387.86	9,100,185.50
% Total	22.5	57.2	7.0	1.6	0.6	0.2	0.7	4.3	5.9	100.0

(1) Includes \$9,500.00 (charge of 500. per year) for nursery inspection work from 1918-1936, Inclusive.

(2) Includes \$ 514.85 for special nursery inspection work during 1933-1934.

(3) " " \$ 224.36 " " " 1932.

Table 104 - Total Cost of All Cooperative Winter Past Control Activities in The Northeastern States During the Period 1918-1936, Inclusive.

State	Maine	N.H.	Vt.	Mass.	R.I.	Conn.	N.Y.	States
State BR Approp.	101,886.35	259,487.03	54,890.93	234,822.39	55,060.95	124,329.00	1,020,679.40	1,746,952.67
Other State Approp.	11,236.40	20,999.97	-	51,506.41	2,013.83	1,127.82	29,174.15	116,425.80
Towns	96,906.13	375,266.15	10,909.66	8,571.92	-	14,957.89	-	506,611.75
Individuals	83,490.41	47,563.76	73,209.37	93,891.39	581.36	8,729.89	169,319.85	776,635.11
Counties	-	987.00	-	-	-	-	7,900.24	8,887.24
Total State Funds	293,519.29	704,303.91	137,009.96	388,792.11	57,656.14	149,144.40	1,227,034.64	3,005,512.51
B.P.I.	249,874.54	434,415.50	119,398.94	323,303.88	43,883.83	103,065.16	479,759.84	1,191,501.68
B.R. and P.Q.	8,491.92	8,628.60	4,274.35	8,970.66	671.75	6,422.06	4,385.85	51,296.54
Park & Forest Services	9,639.44	1,946.91	-	-	-	-	-	12,366.12
Sub-Total	268,005.90	444,991.01	123,673.29	332,274.54	44,761.58	109,487.22	484,655.19	1,255,174.34
E.C.H.	241,351.59	333,278.23	59,214.79	45,164.03	80,744.87	109,320.79	507,134.11	1,271,833.38
P.W.A.	69,126.95	68,597.21	32,168.20	52,071.89	12,427.98	22,479.39	92,334.25	197,753.96
W.P.A.-State Program	-	-	-	-	-	40,890.72	-	40,890.72
W.P.A.-Fed. Program	338,934.90	322,567.95	191,800.26	163,955.50	26,452.68	55,463.19	575,085.71	1,923,299.16
C.W.A.	-	-	-	31,134.05	-	5,936.10	-	37,072.15
E.R.A.	1,426.80	-	-	10,998.20	-	94,478.40	2,779.19	102,683.19
A.R.A.	-	-	-	-	1,640.00	424.81	7,210.85	12,411.95
S.C.S.	-	-	-	-	-	-	-	4,323.38
N.Y.A.	-	-	-	-	-	-	-	220.80
Sub-Total	651,342.24	524,443.39	283,183.25	303,323.70	121,265.53	328,995.40	1,187,305.16	4,159,498.66
Total Federal Funds	919,348.14	969,434.40	406,856.54	635,598.24	166,027.11	438,482.62	1,672,480.31	5,044,673.00
Grand Total	1,212,867.43	1,673,738.31	543,866.50	1,024,390.35	223,683.25	587,627.02	2,899,545.02	9,100,185.57
Percentage of Total	13.3	18.4	6.0	11.3	2.4	6.4	31.9	100.0

Table 105 - Acreage of White Pine in Northeastern States

(Based on cartographical survey of 1925-1927, except in New Jersey where figures represent estimates made in 1934.)

State	a.-Pure White Pine (80-100% white pine)		b.-Mixed Types Con- taining White Pine		c.-Other Types* with 1-20% White Pine Above Re- stocking size and also Pine Restocking	Total* (a+b+c)	White Pine Restocking (All types except pure pine under 6" DBH)
	6" and Over DBH	Under 6" DBH	30-79%	21-29%			
Me.	304,790	284,490	794,915	248,258	976,458	2,608,911	1,703,727
N.H.	263,526	548,225	278,366	296,439	157,477	1,544,033	596,552
Vt.	29,923	73,453	160,147	78,415	225,146	567,084	296,726
Mass.	162,113	288,686	273,266	63,765	170,734	958,564	333,015
R.I.	13,343	436	-	-	59,417	73,196	59,417
Conn.	32,697	40,729	66,551	57,794	18,383	216,154	53,071
N.Y.	214,600	457,171	242,218	231,699	170,269	1,315,957	286,104
N.E.&N.Y.	1,020,992	1,693,190	1,815,463	976,370	1,777,884	7,283,899	3,128,695
N.J.	600	1,500	2,000	1,500	2,000	7,600	3,000
Pa.	51,854	40,043	28,078	98,023	157,630	375,628	226,292
All States	1,073,446	1,734,733	1,845,541	1,075,893	1,937,514	7,667,127	3,357,987

*Excludes those "other types" which have 1-20 percent white pine (above restocking size) but do not contain white pine restocking.

A summarization and analysis of the pine and control area mapping data obtained during the past few years will make it possible to check the above figures during the fall of 1937.

A total of 62,768,910 white pines have been distributed from state nurseries in the Northeastern States during the period 1931 to 1936, inclusive, as follows: Maine, 99,400; New Hampshire, 3,089,779; Vermont, 339,975; Massachusetts, 5,729,000; Connecticut, 243,537; New York, 45,794,864; New Jersey, 965,000; and Pennsylvania, 6,507,355.

Table 106 - Commercial Value of White Pine in Northeastern States

State	Pure White Pine (80-100% white pine)		Mixed Types Containing White Pine		White Pine (Above re- stocking size) in Other Types*	White Pine Restocking in all types Except "Pure Pine Under 6" DBH"	Total (Including White pine restocking)
	6" and Over DBH	Under 6" DBH	30-79%	21-29%			
Me.	\$ 34,136,480	\$ 7,112,250	\$ 44,515,240	\$ 6,951,224	\$ 6,835,206	\$2,559,199	\$102,109,329
N.H.	29,514,912	13,705,625	15,588,496	8,500,292	1,102,339	707,534	68,919,158
Vt.	3,351,376	1,836,325	8,968,232	2,195,620	1,576,022	412,279	18,330,454
Mass.	18,156,656	7,217,150	15,302,896	1,785,420	1,195,138	599,752	44,257,002
R.I.	1,494,416	10,900	-	-	415,919	80,818	2,002,043
Conn.	3,662,064	1,018,225	3,726,856	1,618,232	128,681	86,358	10,240,416
N.Y.	24,035,200	11,429,275	13,564,208	6,487,572	1,191,883	419,084	57,127,222
N.E.&N.Y.	114,351,104	42,329,750	101,665,928	27,338,360	12,445,188	4,865,024	302,995,354
N.J.	67,200	37,500	112,000	42,000	14,000	3,000	275,700
Pa.	5,807,648	1,001,075	1,572,368	2,744,644	1,103,410	226,292	12,455,487
All States	\$120,225,952	\$43,368,325	\$103,350,296	\$30,125,004	\$13,562,598	\$5,094,316	\$315,726,491

*Excludes those "other types" which have 1-20 percent white pine (above restocking size) but do not contain white pine restocking.

Basis for estimating value of merchantable white pines: stumpage figured at normal value of \$7.00 per M - average contents per acre, pure merchantable white pine = 16 M board feet, mixed white pine 30-79% = 8 M board feet, mixed white pine, 21-29% = 4 M board feet, and white pine, above restocking size, in other types = 1 M board feet. Pure stands of white pine under 6" DBH given normal value of \$25.00 per acre. Basis for estimating normal per acre value of white pine restocking: degree of restocking, light = \$1.00, medium = \$2.00, heavy = \$3.00.

Table 107 - Relation of Total Cost of All Control Activities to Total Commercial Value of White Pine in Northeastern States

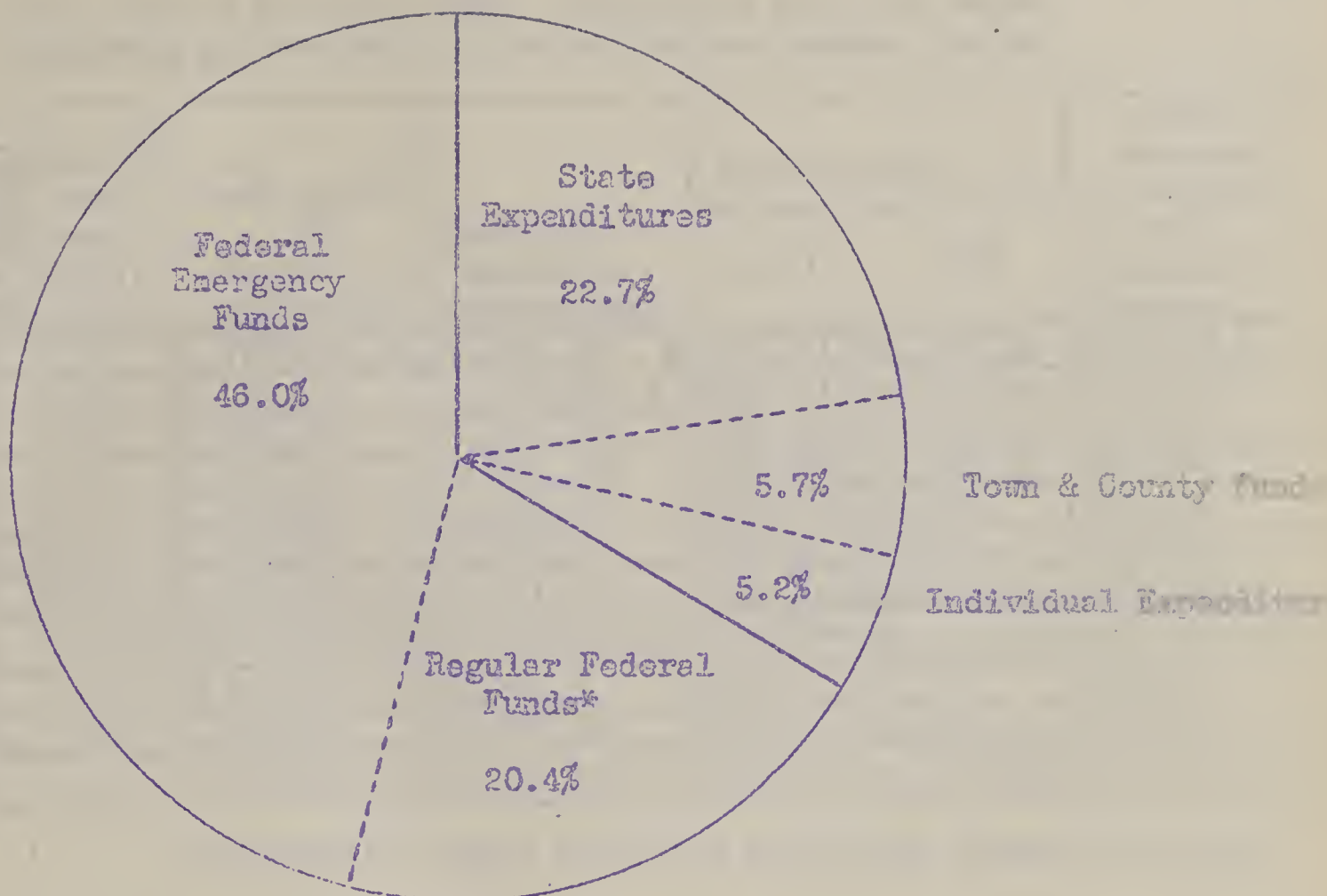
State	Acreage of White Pine	Commercial Value of White Pine	Total Cost of All Control Activities*	Percentage of Total Commercial Value Represented by Cost of All Control Activities	Percentage of Total Control Area Protected	
					Initial	Reerad.
Maine	2,608,911	\$102,109,599.	\$1,212,867.43	1.2	78.6	23.3
N. H.	1,544,033	68,919,198.	1,673,738.31	2.4	90.7	25.4
Vt.	567,084	18,339,854.	543,866.50	3.0	51.0	48.6
Mass.	958,564	44,257,012.	1,024,390.35	2.3	97.2	37.4
R. I.	73,196	2,002,053.	223,683.25	11.2	91.3	78.2
Conn.	216,154	10,240,416.	587,627.02	5.7	80.8	87.5
N. Y.	1,315,957	57,127,222.	2,899,545.02	5.1	63.5	50.0
N. J.	7,600	275,700.	31,779.52	11.5	50.1	-
Pa.	375,628	12,455,437.	902,688.17	7.2	55.5	95.4
Totals	7,667,127	\$315,726,491.	\$9,100,185.57*	2.9	79.2	36.2

*The comparatively high percentage figures in Rhode Island, New Jersey and Pennsylvania may be attributed to the following facts. In Rhode Island, over a hundred thousand acres of potential pine land has been cleared of Ribes in addition to the protection of the pine area. The value of the potential pine acreage is not, of course, included in the pine values. In New Jersey and Pennsylvania, the pine areas are small and scattered necessitating larger proportionate protection zones. In both states practically all the control work has been performed by inexperienced men employed on Emergency Programs. The cost of control activities in Pennsylvania and New Jersey prior to the beginning of Ribes eradication work in 1929 and 1934, respectively, is included in the total expenditure figures. Only 7,600 acres have been worked in New Jersey. The major control activities in that state comprise scouting, field studies, nursery sanitation, and informational and service work. In Pennsylvania, the Ribes are numerous and of large size. Many of the pine areas are in remote hilly sections at considerable distance from roads.

The total cost includes \$4,189,498.66 Federal Emergency money expended on control work since 1933. This amount represents 46 percent of the total expenditures since 1918. A portion of the Emergency money could properly be charged to relief rather than control activities.

The basis for acreages and values of white pine are given on page 160.

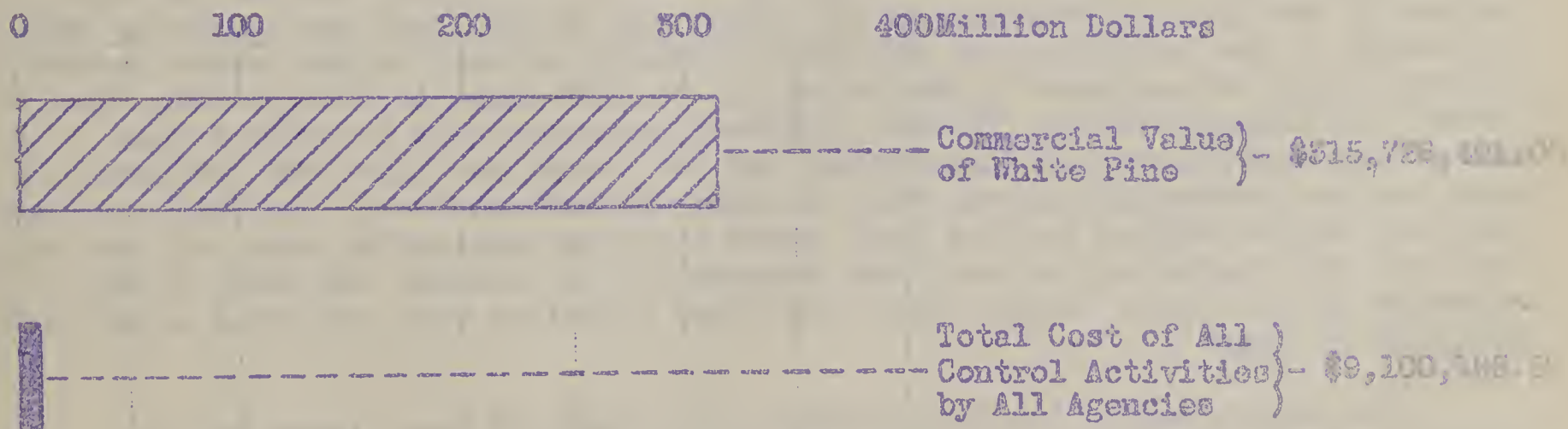
COOPERATIVE BLISTER RUST CONTROL EXPENDITURES
IN NORTHEASTERN STATES, 1918-1936, INCLUSIVE



Total Expenditures - \$9,100,185.57

*Includes \$12,866.12 by Forest and
and Park Services.

RELATION COMMERCIAL VALUE OF WHITE PINE TO TOTAL COST
OF ALL CONTROL ACTIVITIES IN NORTHEASTERN STATES
1918-1936, INCLUSIVE



Total control cost represents 2.9% commercial pine value.

Table 100 - Per Acre Cost of Ribes Eradication Work in Northeastern States
During Period 1918 to 1936, Inclusive

(Based on Ribes eradication costs only and on the total costs of all control activities by all cooperating agencies)

State	Total Acreage Cleared of Ribes (Initial & reerad.)	No. Ribes Pulled		Total Cost of Ribes Eradication*	Total Cost of All Control Activities	Ribes Per Acre (Wild only)	Cost Per Acre			
		Wild	Cult.				Eradication Costs Only		Total Expenditures All Projects	
							1918 to 1936	Ave. Per Year	1918 to 1936	Ave. Per Year
Me.	3,554,473	45,874,023	143,234	\$ 726,286.29	\$1,212,867.43	12.9	.204	.011	.341	.018
N.H.	3,667,823	59,740,877	151,009	1,000,992.31	1,673,738.31	16.3	.273	.014	.456	.024
Vt.	441,170	9,035,203	13,877	306,825.24	543,866.50	20.5	.695	.037	1.233	.065
Mass.	2,573,744	18,459,772	270,481	521,907.98	1,024,390.35	7.2	.203	.011	.398	.021
N.J.	532,062	475,265	21,205	119,968.02	223,683.25	0.9	.225	.012	.420	.022
Conn.	531,495	4,952,457	34,243	227,941.13	567,627.02	8.8	.406	.021	1.047	.055
N.Y.	2,138,478	51,107,334	111,394	1,719,172.89	2,899,545.02	23.9	.804	.042	1.356	.071
Penn.	13,439,245	189,644,931	745,443	4,623,093.86	8,165,717.88	14.1	.343	.018	.606	.032
Del.	16,742	47,780	1,713	5,284.33	31,779.52	2.9	.316	See explanation below		
Pa.	414,204	26,784,396	31,455	375,052.62	902,688.17	64.7	1.39	"	"	"
Ill.	15,900,191	216,477,107	778,611	\$5,203,430.81	\$9,100,185.57	15.6	.374	-		

*Excludes nursery sanitation and Ribes nigrum elimination.

Per acre data for Pennsylvania and New Jersey were omitted from the above table because Ribes eradication work in those states was not begun until 1929 and 1934, respectively. In New Jersey only a few thousand acres have been cleared of Ribes; the control activities being confined chiefly to pine and infection scouting, field studies, nursery sanitation, and informational and service work by part-time employees. No satisfactory comparison can be made between the per acre costs in the various states, due to numerous factors directly affecting the cost of the eradication work. The lower per acre cost in Maine, Massachusetts, Rhode Island and New Hampshire may be attributed in part to the localization of the Ribes in certain sections and that under the regular program large portions have been worked by scouting methods. In New York, Pennsylvania, and Vermont, the cost has been increased by the size and abundance of the Ribes, and in the first two states by the ruggedness of the topography and the inaccessibility of many of the control areas. The small size and scattered distribution of the pine areas in Pennsylvania, New Jersey, and Connecticut has likewise increased per acre costs in these states. Most of the control work in Pennsylvania and New Jersey has also been performed under various Emergency Programs with an inexperienced personnel. In 1933, the per acre cost in New England and New York, based on Ribes eradication work only and on the total area worked up to that time, amounted to 22.7 cents. By 1936, it had increased to 34.3 cents chiefly due to the less efficient work performed under the Emergency Programs.

The compilation of per acre values on the basis of total costs of all control activities by all cooperating agencies is probably not justifiable, because such expenditures include among other items the cost of field surveys and studies, informational and service activities, nursery sanitation, canker elimination, and Ribes nigrum elimination which are not directly related to the regular Ribes eradication work and cannot in most instances be figured on a per acre basis.

BLISTER RUST CONTROL ACTIVITIES AND ACCOMPLISHMENTS,

BY RESPECTIVE STATES, IN NORTHEASTERN REGION

DURING THE PERIOD 1918-1936, INCLUSIVE

BLISTER RUST CONTROL IN MAINE

The commercial range of white pine in Maine covers practically the entire southern half of the state. According to Dr. S. B. Dana, former Forest Commissioner of Maine, "white pine is by all odds the most important tree in southern Maine. It covers a larger area, is used for more purposes, and brings a far greater return than any other tree in that part of the state. Its management as a permanent crop, both on farm woodlots and on wild lands, is essential to maintain the prosperity of the region". The U. S. Census figures from 1931 to 1934 show white pine constituted 60 percent of the entire cut of soft woods in Maine. In the southwestern counties it is most abundant, usually occurring in pure stands which frequently cover large areas. In the counties of Washington, Hancock, and Penobscot, it exists chiefly as commercial-size trees in mixture with other species. The amount of pine in these mixtures ranges from 5 to 30 percent.

Acreage and Commercial Value of White Pine (Based on Cartographical Survey of 1926)

	<u>Acreage</u>	<u>Value (3)</u>	<u>Value (4)</u>
Pure white pine (80-100% pine) - (Over 6" DBH....	304,790	\$34,136,480.	\$24,383,200.
(Under 6" DBH... 284,490	284,490	7,112,250.	7,112,250.
Mixed white pine (21-29% pine in mixture.....	248,258	6,951,224.	4,965,160.
(30-79% pine in mixture.....	794,915	44,615,240.	31,796,600.
Other types with scattered white pine stocking and restocking.....	976,458 (1)	(6,835,206. (5)	4,882,290.
		(1,218,046. (6)	1,218,046.
White pine restocking in pure merchantable and mixed white pine types.....	727,269 (2)	1,341,153.	1,341,153.
Totals.....	2,608,911	\$102,109,599.	75,698,699.

(1) Excludes those "other types" which have 1-20% pine (above restocking size), but do not contain white pine restocking.

(2) This acreage not included in total as it is already listed under pure and mixed white pine types.

(3) Basis \$7 stumpage. (4) Basis \$5 stumpage.

(5) Pine stocking. (6) Restocking.

Basis for estimating value of white pine: merchantable stumpage figured at value of \$5 and \$7 per M - average contents per acre, pure merchantable white pine = 16 M bd. ft.; mixed white pine, 21 - 29% = 4 M bd. ft.; mixed white pine, 30-79% = 8 M bd. ft.; and white pine, above restocking size in other types = 1 M bd. ft. Pure stands of white pine under 6" DBH given normal value of \$25 per acre. Estimated normal per acre value of white pine restocking: degree of restocking; light = \$1, medium = \$2, heavy = \$3.

Stumpage prices under present conditions range from \$4 to \$8 per thousand board feet. This is, however, a temporary situation which should return to normal when economic conditions improve.

The scenic and recreational value of white pine in Maine probably equals or exceeds the commercial value.

Ribes Conditions

In the southwestern part of the state, Ribes are concentrated chiefly on about 20 percent of the area. These concentrations, mostly Ribes hirtellum and prostratum,

necessitate crew work, but the remaining portion can be cleared of such bushes by scouting methods. In the other sections of the state, Ribes are more or less generally distributed and more abundant, thus requiring systematic crew work to assure effective removal of the bushes. An average of 12.9 Ribes per acre were destroyed on a total of 3,554,473 acres worked during the period 1918 to 1936, inclusive.

Pine Infection Conditions

Infection on white pine is general throughout the commercial range of white pine. Based on township units in this region, the percentage of diseased pine ranges from 1 to 10 percent or more of the total amount of pine. Most of the infection originated since 1918, and is especially abundant in that part of the pine region north and northeast of the counties of York and Cumberland where sandy conditions exist. The oldest infection is located at Kittery Point. It apparently originated in 1897 from cultivated black currants imported from England. In 1920, a 38.5 mile strip line survey showed that 6.3 percent of the 7,046 pine examined were infected. In 11 plots, totaling 2.7 acres, 14.4 percent of the 970 pines were diseased. Another strip line survey was conducted during 1933 in eastern Maine to determine the amount of blister rust infection on white pines in unprotected areas. All pines twenty feet or less in height were inspected on a rod-wide strip totalling 23.5 miles in length. Twenty-seven percent of the 5369 pines examined were found to be diseased with blister rust, and over seventy-four percent of the cankers had originated since 1925. During 1934, 5 plots totaling 13 acres in 5 townships were established in unprotected areas in the counties of Knox, Somerset and Androscoggin. These plots contained 7245 white pines, 52.8 percent being infected with 5101 cankers over 60 percent of which originated during the period 1926 to 1931 inclusive. These studies indicated the urgent need for applying control measures in unprotected areas. Dead and dying pines of all sizes are becoming increasingly conspicuous, and are particularly noticable in traveling along the main route from Bucksport to Ellsworth.

Policy

Prior to 1931, the state cooperated with towns and individuals in Ribes eradication by furnishing scouts to systematically examine control areas in order to determine the location of Ribes concentrations which were to be eradicated by individual owners working under the supervision of town foremen. This method was adaptable to the southwestern part of the state where the Ribes occurred chiefly in concentrations on about 20 percent of the area, the remaining portions being eradicated of Ribes by the scouts. The bushes pulled by these men represented less than one percent of the total number destroyed while this field procedure was in force. A new state policy was inaugurated in 1931 whereby the Ribes eradication work was performed on the township basis irrespective of property lines as in New Hampshire, the state paying one-third of the total cost. This new policy was advisable because the Ribes were more numerous and generally distributed in the townships worked after 1930. During 1933-1936 the regular cooperative work was necessarily curtailed due to the control activities conducted under the various Emergency programs. With the exception of the project at Acadia National Park, the control work conducted under the Emergency Programs was supervised by the district blister rust control leaders with the assistance of technical foremen, checkers and supervisors. Under the E.C.W. program, control activities were conducted from a total of six C.C.C. camps.

Informational and Service Activities of Permanent and Temporary Agents, 1923-1936

Informational

Meetings addressed..... 431 Publications distributed*.....65,652
 Attendance.....25,427 Mimeo. articles dist.(1928-1934)* ..4,846
 Field demonstration meetings**.....868 Items published 577
 Attendance**4,989 Posters and signs placed*..... 18,802
 Displays placed.....911 Roadside dem. placed (1930-1934)***.. 104

Service

Initial interviews.....28,458 Persons instructed in field..... 19,940
 Follow-up calls..... 9,646

*No record kept of these items after April 30, 1934.

**Included with "Meetings addressed" after April 30, 1934.

*** " " "Displays placed" " " " " " " " " " " " "

Town and Individual Cooperation in Blister Rust Control Work

During the period 1918-1936, inclusive, a total of \$96,906.13 was expended from 542 town appropriations and 10 town allotments, and 11,093 individual coöperators spent \$33,490.41 on control work. The expenditures by individuals include \$1,055.12 for blister rust canker elimination work during 1932.

Results of Ribes Eradication Work, 1918-1936, Inclusive*
 (Initial and Re-Eradication)

	Acreage Worked	Ribes Pulled		Cost					Per Acre	
		Wild	Cult.	State	Towns	Indiv.	Govt.	Total	Cost	Ribes
Regular	2,836,366	20,875,410	120,387	33044.91	95,453.56	82177.59	47516.10	258192.16	.091	7.4
Special	309,158	8,694,473	9,356	135.00	-	-	160967.91	161102.91	.521	28.1
Subtotal	69,368	2,421,865	1,992	2998.15	-	11.25	42328.82	45338.22	.654	34.9
Grand Total	337,037	13,815,587	11,519	128.48	594.39	-	259433.23	260156.10	.772	41.0
Subtotal	2,549	66,688	-	70.10	-	-	1426.80	1496.90	.587	26.2
Grand Total	3,554,473	45,874,023	143,234	56376.64	96,047.95	82188.84	511672.86	726286.29	.204	12.9

* Excludes nursery sanitation work, 1930-1936, inclusive.

The expenditures by the Government under the Regular Program include \$8345.53 spent by the National Park Service for control work at Acadia National Park and \$39,170.57 B.P.I. money, \$3145.83 of which was expended on the Acadia Park project.

The cost of the Ribes eradication project includes owners' labor (valued at 40 cents per hour) all expenditures for wages of laborers, scouts and foremen employed in locating and pulling Ribes - cost of crew transportation and miscellaneous expenses for trail paper, picks, etc. In the case of the E.C.W. personnel, the cost of their total time on Ribes eradication work was figured at the rate of \$1.35 per eight hour day in 1933, \$1.40 in 1934 and \$1.50 in 1935 and 1936.

Results of First Re-Eradication of Ribes, 1923-1936, Inclusive
(Excludes nursery sanitation work, 1930-1936, inclusive)

Program	Acreage Re-Worked	Ribes Pulled		Total Cost	Per Acre	
		Wild	Cult.		Cost	Ribes
Regular	71,168	931,124	1,912	19,139.99	.269	13.1
E.C.W.	120,582	1,560,745	2,033	42,958.88	.356	12.9
P.W.A.	9,174	225,881	48	4,979.55	.543	24.6
W.P.A.	154,360	3,851,598	7,125	105,480.91	.683	25.0
E.R.A.	2,549	66,688	-	1,496.90	.587	26.2
Total	357,823	6,636,036	11,118	174,056.23	.486	18.5

No satisfactory comparison can be made between the per acre values listed in the preceding two tables, since only 11.2 percent of the area initially protected has been re-examined, and such reworkings were usually restricted to the Ribes sites.

Results of Ribes Eradication Work at Acadia National Park
(Included in preceding eradication summaries)

Program	Type of Erad.	Acreage Worked	Ribes Pulled		Cost			Per Acre	
			Wild	Cult.	Park Service	B.P.I.	E.C.W.	Total	Cost Ribes
Regular	All								
	Initial	7,726	503,920	-	8,345.53	3,145.83	-	11,491.36	1.49 63.2
E.C.W.	Initial	11,717	354,264	293	-	-	12,168.49	12,168.49	1.04 30.8
	Re-Erad.	7,881	32,806	-	-	-	4,941.72	4,941.72	.63 4.7
	Total	19,598	387,070	293	-	-	17,110.21	17,110.21	.87 18.8
Totals	Initial	19,443	858,184	293	8,345.53	3,145.83	12,168.49	23,659.85	1.22 40.7
	Re-Erad.	7,881	32,806	-	-	-	4,941.72	4,941.72	.63 4.7
	Total	27,324	890,990	293	8,345.53	3,145.83	17,110.21	28,601.57	1.05 32.8

This work at Acadia National Park was conducted as a strictly federal project by the National Park Service in cooperation with the Bureau of Plant Industry during the period 1929-1932, inclusive. All control work on the Park since 1933 has been performed by C.G.O. crews, the project being under the technical supervision of the Regional Office of the Division of Plant Disease Control.

Status of Ribes Eradication Work - December, 1936

Type of Erad.	Acreage of Control Area	Acreage of Control Area Worked	Percentage of Control Area Worked	Acreage Still in Need Of Protection
Initial	4,068,648	3,196,650	78.6	871,998
Re-Erad.	1,536,632	357,823	23.3	1,178,809

The "control area" for the initial work comprises the acreage initially cleared of Ribes (pine area plus protection zones) plus the estimated acreage still in need of initial protection. The "control area" for the re-eradication projects include the total acreage re-worked for Ribes during the period 1918-1936, inclusive, plus the estimated acreage in need of Ribes re-eradication. The control area figures were based on township estimates made by the respective district leaders.

Nursery Sanitation

Ribes Eradication Work in Connection with Nursery Sanitation Project. 1930-1936, Inclusive.

Type of Work	Acreage Worked	Ribes Felled		Total Cost	Per Acre	
		Wild	Cult.		Cost	Ribes
Initial eradication	206	103,516	22	\$522.65	\$2.54	502.5
Re-eradication	882	10,631	-	870.86	.987	12.1
Total	1,088	114,147	22	\$1,393.51	1.28	104.9

Since 1930, a separate record has been kept of all nursery sanitation work and these data have not been included in the regular eradication summary. Prior to 1930, it was not possible to separate these data from the available records. However, an incomplete summary supplied by the state leader shows that in connection with such work during the period 1925-1929, inclusive, a total of 815 acres was cleared of 92,912 wild Ribes at a cost of \$702.10. Of this total, 400 acres consisted of re-eradication work, 1,343 wild Ribes being removed at a cost of \$85.00.

Status of Nursery Sanitation Work - December, 1936

No. Nurseries Where Protection Established and Being Maintained			No. Nurseries Protected During 1936	No. White Pines Existing During 1936 in Nurseries Protected That Year
State	Private	Total		
1	1	2	1	300,000

Prior to 1936, four other private nurseries established sanitation zones, but abandoned them for various reasons. During 1929, the Western Maine Forest Nursery at Fryeburg was granted an interstate pine shipping permit under Federal Quarantine 63. This permit was revoked in 1931, but renewed in 1933.

Ribes: Ribes Nigrum Elimination

The control policy in Maine requires the destruction of all cultivated Ribes in the white pine areas. Therefore, black currants are eradicated in connection with the regular town control projects. It will, however, be necessary to make special arrangements for eliminating Ribes nigrum outside the control districts. Many Ribes americanum are cultivated in Maine, but apparently few Ribes nigrum.

Blister Rust Canker Elimination Work, 1932-1936, Inclusive.

Project	Program	Total No. Pines Examined	No. Fatally Infected Pines Cut Down	No. Pines Treated For Infection	Infections Removed		Total Cost
					Branch	Stem	
State	Regular	77,000	6,046	10,704	14,677	1,378	\$ 1,055.12
	Regular	2,546	319	716	1,430	61	321.04
Acadia Park	E.C.W.	52,725	2,660	7,461	24,505	2,459	3,291.61
	Total	55,271	2,979	8,176	25,935	2,520	3,612.65
Totals	Regular	79,546	6,365	11,419	16,107	1,437	1,376.16
	E.C.W.	52,725	2,660	7,461	24,505	2,459	3,291.61
	Total	132,271	9,025	18,880	40,662	3,896	4,667.77

The state work was conducted in 12 towns during 1932 and 1933, while the project at Acadia Park was initiated by the Park Service in 1932 and continued with C.C.C. personnel during 1933-1936 inclusive.

Cultivated Ribes Compensation

No compensation has been paid for the 143,256 cultivated Ribes that have been uprooted in Maine during the period 1918-1936 inclusive.

Surveys

During 1920 and 1921, the white pine types were mapped in several towns in Maine. Briscoe had maps and a report prepared of this work. The maps were used later as a basis for control work and for estimating the amount and value of the white pines. Strip line infection surveys were made by Frost in 1920. The pines on road-wide strips totaling 38.5 miles in length were examined - A total of 7,046 pines were inspected, and 6.3 percent were found infected. Eleven plots, totaling 2.7 acres, were also laid out adjacent to the strips, 14.4 percent of the 970 pines in these plots were diseased. The data were used for informational purposes. An epidemiology survey was made during 1926, by district leaders and Hirt, of white pine and other forest types, Ribes and infection conditions. Maps and summaries were prepared at Boston Office. See "Pine Infection Conditions" for results of strip line study made in 1933. During 1933-1936, detailed pine and control area mapping was conducted during the late fall, winter, and early spring months under the Regular, E.C.W., P.W.A. and W.P.A. Programs. The results accomplished, by programs, are shown in the following summary.

Pine and Control Area Mapping

Program	Period	Acreage Mapped	Acreage Examined But Not Mapped	Miles Boundary Lines Painted	Total Man Days	Total Cost
Regular	1933-35	21,976	36,055	-	104	\$625.98
E.C.W.	1933-35	286,020	168,028	-	2,393	16,653.54
P.W.A.	1933-35	215,714	384,810	-	805	6,538.14
W.P.A.	1935-36	616,413	1,260,012	1,641	9,168	40,769.49
Totals	-	1,140,123	1,848,905	1,641	12,469	64,587.15

Pine and control area mapping has been completed in 141 townships and partially finished in 43 others. No mapping has been performed in 289 townships. It is estimated that 21,000 man days of work will be required to complete the mapping project.

Plot Studies

Demonstration control areas were established at Kittery Point and Brunswick. Very little data on these studies available. Infection and effectiveness of control study made by Posey at Kittery Point - report published. Many pine damage plots laid out by district leaders - used for demonstration purposes - infection data summarized and used in informational work. Effectiveness of control studies were made by agents during 1929 and 1934. These data were summarized at the Regional Office, and copies of the summaries sent to the state leader and Washington Office. Four of the Maine leaders, including the state leader, cooperated in a study to determine the immunity of the Viking currant to blister rust infection.

Total Cost of All Blister Rust Control Work, 1918-1936, Inclusive

Source of Funds	Amount Spent	% Total	
State B.R. Appropriation.....	101,886.55	8.4	} 24.2% By State
Other State Appropriations.....	11,236.40	0.9	
Individuals.....	83,490.41	6.9	
Towns.....	96,906.13	8.0	
B.P.I.	249,874.54	20.6	} 75.8% By Gov't.
B.E. and P.Q.	8,491.92	0.7	
Park Service.....	9,639.44	0.8	
E.C.W.	241,851.59	19.9	
P.W.A.	69,128.95	5.7	
W.P.A.	338,934.90	28.0	
E.R.A.	1,426.80	0.1	
Total	\$ 1,212,867.43	100.0	

Expenditures from federal emergency funds since 1933 amount to 53.7 percent of the total cost.

The total expenditures for all control work include cost of administration, supervision, blister rust control agent activities, Ribes eradication, field studies, pine and control area mapping, nursery sanitation, and miscellaneous.

Relation of Total Cost of All Control Activities to Total Commercial Value of White Pine

Area of White Pine	Commercial Value of White Pine	Total Cost of All Control Activities, 1918-1936, Incl.*	Percentage of Total Commercial Value Represented by Cost of All Control Work
2,303,911	\$102,109,599.	1,212,867.43	1.2

* Includes expenditures at Acadia National Park.

Comparison Between Cost Per Acre Based on Eradication Costs Only and on Cost of All Control Projects, 1918-1936, Inclusive
(Including Acadia National Park Project)

Acres Per Acre	Cost Per Acre			
	Based on Ribes Eradication Costs Only		Based on Total Expenditures	
	1918-1936	Ave. Per Year	1918-1936	Ave. Per Year
2.9	.204	.011	.341	.018

Future Work

Complete initial control work on 871,998 acres - pine plus protection zones - (based on township estimates made by district leaders in 1936). Re-examination of 1,178,809 acres that district leaders estimate now need to be reworked. Complete pine and control area mapping in 289 townships where no work of this type has been performed and in 43 other townships which have been partially mapped.

BLISTER RUST CONTROL IN NEW HAMPSHIRE

The commercial range of white pine in New Hampshire covers the entire state, except portions of Coos County and sections in the vicinity of the Notches. In the eastern part of Grafton and Sullivan Counties, white pine exists chiefly in mixture with other species; but in the other sections of the state south of the White Mountains, it usually occurs in pure stands frequently more or less continuous over large areas. Mr. L. E. Newman describes pine conditions in New Hampshire as follows:

"White pine is the most important tree in New Hampshire irrespective of all other soft or hardwood species. Its range embraces a greater area than any other tree. In rate of growth, on good sites, it outranks all other hard or soft woods.

"Over a long period of time, and including even today, the lumber cut of northern white pine has been from 65 to 70 percent of the entire lumber cut of New Hampshire. More than 50 percent of the wood-using industries use white pine exclusively in the manufacture of hundreds of commodities. Its logging and manufacture provide, in addition to specialty mills, employment for thousands of persons. Irrespective of the competition by substitute containers, the manufacture of wooden boxes is still a 'going business', for there exists many commodities in the shipping of which white pine boxes offer the only safe type of a container.

"White pine has in the past constituted a 'bank reserve' for a large majority of rural residents, especially farmers. Without any expenditure for cultivation, this tree has been the means of reducing or eliminating mortgages, educating children and often providing for old-age independence. In more recent years, the presence of a few white pines, or a woodlot of the same species, has added very materially to the value of rural homes sold to summer or all-year-round residents.

"From a scenic point of view, especially in these days, it is likely that white pine growth may be of greater value to the state than is its lumber, or commercial worth. With the tremendous increase in summer, as well as winter population, plenty of evidence is obtainable to prove that white pines are a source of much attraction to out-of-state persons. Since softwood forests are green throughout the year, and especially during the winter months are much more attractive than leafless hardwoods, the fact that the bulk of softwoods in this state are composed of pine goes to indicate its scenic value even during cold weather. Throughout the entire lake and much of the mountain region of New Hampshire, white pine being predominant add immeasurably to the beauty, attractiveness and popularity of these resort centers."

Agriculture and Commerce. Value of White Pine

(Based on cartographical survey of 1926)

	<u>Acresage</u>	<u>Value</u> ⁽³⁾	<u>Value</u> ⁽⁴⁾
Pure white pine (80-100% pine)-{Over 6" DBH.....	263,526	\$29,514,912.	\$21,082,080.
Under 6" DBH.....	548,225	13,705,625.	13,705,625.
Mixed white pine -{21-29% pine in mixture.....	296,439	8,300,292.	5,298,780.
{30-79% pine in mixture.....	278,366	15,588,496.	11,134,640.
Other types with scattered white pine stocking and restocking.....	157,477 ⁽¹⁾	{ 1,102,339. ⁽⁵⁾ 258,695. ⁽⁶⁾	737,385. 258,695.
White pine restocking in pure merchantable and mixed white pine types.....	239,031 ⁽²⁾	448,839.	448,839.
Totals.....	1,544,033	\$68,919,198.	\$52,716,044.

(1) Excludes those "other types" which have 1-20% pine (above restocking size), but do not contain white pine restocking.

(2) This acreage not included in total as it is already listed under pure and mixed white pine types.

(3) Basis - \$7 stumpage. (4) Basis - \$5 stumpage.

(5) Pine stocking. (6) Restocking.

Basis for estimating value of white pine: merchantable stumpage figured at value of \$5 and \$7 per M - average contents per acre, pure merchantable white pine = 16 M bd. ft.; mixed white pine, 21-29% = 4 M bd. ft.; mixed white pine, 30-49% = 8 M bd. ft.; and white pine, above restocking size in other types = 1 M bd. ft. Pure stands of white pine under 6" DBH given normal value of \$25 per acre. Estimated normal per acre value of white pine restocking: degree of restocking, light = \$1.00, medium = \$2.00, heavy = \$3.00.

Stumpage prices under present conditions range from \$4.00 to \$8.00 per thousand board feet. This is, however, a temporary situation which should return to normal with improved economic conditions.

Since 1931, a total of 3,089,779 white pines have been distributed from the state nursery for reforestation purposes.

Ribes Conditions

Ribes are generally distributed throughout the state being most abundant in the west central and northern portions. An average of 16.5 bushes per acre were destroyed on the 3,667,823 acres cleared of Ribes in New Hampshire during the period 1918-1936 inclusive. In the southern part of the state, there are many sections where such bushes are so few or localized that they can be effectively eradicated by scouts.

Town and Individual Cooperation in Blister Rust Control Work

During the period 1918-1936, inclusive, a total of \$375,266.15 was expended from 1,202 town appropriations and 8 town allotments, and 684 individual cooperators spent \$47,563.76 for control work on their properties. In addition, 5 individuals expended \$42.85 on Ribes eradication work during 1917 and two counties contributed \$987.00 for control work during 1936. The town expenditures include \$847.94 for projects other than Ribes eradication during 1922, and the amount spent by individual cooperators comprises \$172.28 used on nursery sanitation projects during 1930-1936, inclusive.

Results of Ribes Eradication Work, 1918-1936, Inclusive*
(Initial and Reeradication)

Person	Acreage Worked	No. Ribes Pulled		State	Total Cost			Per acre	
		Wild	Cult.		Local Coop.	Govt.	Total	Cost	Ribes
Regular	3,171,778	40,728,539	144,626	\$162,952.58	\$421,461.94	\$ 60,932.25	\$645,346.77	.203	12.8
N.H.	112,633	7,148,572	373	144.00	-	90,985.48	91,129.48	.809	63.5
Vt.	45,871	1,367,933	3	20.10	-	27,188.92	27,209.02	.593	29.8
N.J.	337,541	10,495,833	6,007	257.98	1,334.75	235,714.31	237,307.04	.703	31.1
Total	3,667,823	59,740,877	151,009	\$163,374.66	\$422,796.69	\$414,820.96	\$1,000,992.31	.273	16.3

*Excludes nursery sanitation work, 1930-1936, inclusive.

The expenditures by the Government under the Regular Program include \$59,460.63 B.P.I. money and \$1,471.62 spent by the Forest Service for work on the White Mountain National Forest.

Control work was conducted from 9 C.C.C. Camps during 1933, 8 camps in 1934, 1935 and 1936.

The cost of the Ribes eradication work comprises wages of laborers, strawbosses, scouts, and foremen employed in locating and pulling Ribes - expenses for crew transportation, trail paper and picks. In the case of the E.C.W. personnel, the cost of their total time on Ribes eradication work was figured at the rate of \$1.35 per eight-hour man day in 1933, \$1.40 in 1934, and \$1.50 in 1935 and 1936.

Results of First Reeradication of Ribes, 1925-1936, Inclusive
(Excludes nursery sanitation work, 1930-1936, inclusive)

Person	Acreage Reworked	No. Ribes Pulled		Man Days	Total Cost	Per Acre		
		Wild	Cult.			Cost	Ribes	Man Days
Regular	411,787	2,547,746	3,440	19,149	\$ 61,594.30	.150	6.2	.05
E.C.W.	34,110	1,487,154	-	13,157	20,906.46	.613	43.6	.39
N.J.	2,302	88,224	-	503	1,241.40	.539	38.3	.13
N.P.A.	169,791	3,793,806	1,275	32,751	111,091.28	.654	22.3	.19
Total	617,990	7,916,930	4,715	65,360	\$194,833.44	.315	12.8	.11

The acreage reexamined for Ribes in New Hampshire represents 23.1 percent of the total area that has been reworked in the Northeastern States. No satisfactory comparison can be made between the per acre values listed in the above two tables, since only 25.4 percent of the area initially protected in New Hampshire has been reexamined, and such reworkings were usually restricted to the Ribes sites.

Results of Ribes Eradication Work on White Mountain National Forest, 1924-1932, Inclusive

(These data are included in preceding Ribes eradication summaries)

Program	Type of Erad.	Acreage Worked	Wild Ribes Pulled	Cost					Per Acre	
				State	B.P.I.	Forest Service	E.C.W.	Total	Cost	Ribes
Regular	All Initial	6,779	182,493	\$224.11	\$75.63	\$1,471.62	-	\$1,771.36	.261	26.9
E.C.W.	Initial	1,170	625,295	-	-	-	3,231.25	3,231.25	2.76	514.1
	Reerad.	3,245	269,089	-	-	-	2,337.41	2,337.41	.720	82.3
	Total	4,415	894,384	-	-	-	5,568.66	5,568.66	1.26	202.2
Total	Initial	7,949	807,788	224.11	75.63	1,471.62	3,231.25	5,002.61	.629	101.7
	Reerad.	3,245	269,089	-	-	-	2,337.41	2,337.41	.720	82.3
	Total	11,194	1,076,877	\$224.11	\$75.63	\$1,471.62	\$5,568.66	\$7,340.02	.658	96.9

The control work on the White Mountain National Forest during the period 1924-1932 was conducted under the regular program, and since that time by crews from federal CCC camps.

Status of Ribes Eradication Work in New Hampshire - December, 1936

Program	Acreage of Control Area	Acreage of Control Area Worked	Percentage of Control Area Worked	Acreage Still in Need of Protection
Initial	3,363,220	3,049,833	90.7	313,387
Reeradication	2,430,943	617,990	25.4	1,812,953

The control area for the initial work comprises the acreage initially cleared of Ribes (pine area plus protection zones) plus the estimated acreage still in need of initial protection. The latter figure was based on township estimates made by the respective district leaders.

The control area for the reeradication projects includes the total acreage reexamined for Ribes plus the estimated acreage that is now in need of reeradication work.

Nursery Sanitation

Results of Ribes Eradication Work in Connection with Nursery Sanitation Project (1930-1936)

Acreage Worked (All reeradication)	Ribes Pulled		Total Man Days	Total Cost	Per Acre		
	Wild	Cult.			Cost	Ribes	Man Days
1,503	7,755	0	263	\$879.99	.585	5.2	.18

Since 1930, a separate record has been kept of the nursery sanitation work and these data have not been included in the regular eradication summaries. An incomplete summary supplied by the state leader for the period 1925-1929, inclusive, shows that 920 acres were cleared of 3,380 wild and 45 cultivated Ribes at a total cost of \$424.18. Of this total, 805 acres were reeradication work, 3,351 wild and 45 cultivated bushes being eradicated at a cost of \$407.62. No data are available for any of the work performed prior to 1925.

Status of Nursery Sanitation Work - December, 1936

	Number White Pine Growing Nurseries				Number Protected from Blister Rust			
	Reforestation Only	Ornamental Only	Both	Total	Reforestation Only	Ornamental Only	Both	Total
Commercial Nurseries	-	3	1	4	-	3	1	4
State Nurseries	1	-	-	1	1	-	-	1
Total	1	3	1	5	1	3	1	5

All the white pine growing nurseries in the state have been examined for Ribes. The state nursery at Gerrish, the Keene Forestry Association Nursery at Keene, and the Eastman Nursery at Conway have been maintaining sanitation zones around their respective properties for years. In spite of this, considerable pine infection was found during 1928 in the Keene Nursery, where a difficult skunk current situation exists. As a result, this nursery destroyed 30,000 white pine transplants and also arranged for a reinspection of the nursery and its environs for Ribes. A single pine infection was also discovered at the state nursery during 1928. A reexamination of the environs of this nursery during the fall of 1932 resulted in the location of several Ribes. The sanitation zone surrounding this nursery was again reexamined for Ribes during 1933 and 1936. Two of the nurseries growing ornamental white pines only were protected in conjunction with the regular Ribes eradication work.

Ribes Nigrum Elimination

The prosecution of the town control policy in New Hampshire results in the systematic eradication of all cultivated Ribes from the white pine regions; therefore, no special project has been needed to eliminate Ribes nigrum.

Cultivated Ribes Compensation, 1918-1936

Total number of cultivated bushes destroyed.....	151,009
Number of bushes for which compensation was paid.....	2,008
Number of persons paid compensation.....	63
Amount paid.....	\$550.60

Surveys

During 1919, detailed forest type maps were made of the townships of Dover and Kensington. This work developed effective methods of mapping and estimating, and the data were also used for control work and informational purposes. In 1924, the State Forestry Department completed a survey of forest resources, which showed that 50 percent of the wood products in New Hampshire were made of white pine. The annual cut of this species varies from 55 to 70 percent of the total lumber cut in the state. Strip line infection surveys were made in 1920. The pines on road-wide strips, totaling 54.5 miles in length, were examined, a total of 9,919 pines were inspected and 13 percent were found infected. A total of 213 plots, totaling 49.1 acres, were laid out adjacent to the strips; 51.5 percent of the 7,014 pines in these plots were diseased. A cartographical survey of the entire state during 1926

gave information by townships on the distribution and amount of Ribes and infection. During 1928, a survey was made in 69 backward towns to locate and map the minimum control area, which should be cleared of Ribes to protect the pine. Partly as a result of the facts obtained by this survey over 30 percent of these towns appropriated for control work in 1929. Similar work was conducted in other towns during 1931 and 1932. It resulted in complete data being secured, by township units, on the remaining acreage still needing initial protection. During 1933-1936, detailed pine and control area mapping was performed under the Regular, P.W.A., W.P.A., and E.C.W. Programs. The following table summarizes the results of this work by programs.

Pine and Control Area Mapping in New Hampshire - 1933-1936

Program	Period	Acreage Mapped	Acreage Examined but Not Mapped	Total Man Days	Total Cost
Regular	1933-35	18,338	-	311	\$ 1,244.00
E.C.W.	1933-36	65,048	2,740	2,662	8,763.21
P.W.A.	1933-35	106,636	-	1,664	9,443.25
W.P.A.	1935-36	355,932	48,486	7,584	36,640.98
Total	-	545,954	51,226	12,021	\$56,091.44

Pine and control area mapping has been completed in 14 townships and partially finished in 118 others. No mapping has been performed in 91 townships. It is estimated that 44,076 man days of work will be required to complete the mapping project.

Plot Studies

Demonstration control areas established at Conway in 1917 and at Wolfeboro in 1919 - latter area reinspected during 1927 and partly reworked in 1936. Detailed infection studies were made by Endersbee at Hooksett, Hampstead, Sunapee, and Littleton - (reports submitted); by Posey, at Deerfield and Lisbon - (no report); by Richards, at Temple - (preliminary report only). Many damage and demonstration plots studied by district leaders. Data used for informational purposes. Ribes regrowth study made by Newman at Newmarket - (no report submitted). During 1929 and 1934, effectiveness of control studies were made by the district leaders. These data were summarized at the Regional Office, and copies of the summaries were sent to the state leader and to Washington Office for informational purposes. Chemical eradication study plots have been established in Baker's and Swain's districts. Five of the New Hampshire leaders cooperated in a study to determine whether the Viking currant was immune to blister rust infection under field conditions.

Effectiveness of Blister Rust Control

During 1934, plot and strip line studies were made to determine the amount of blister rust infection on white pines in protected and unprotected areas in New Hampshire. The disease had existed in these tracts since 1914. Ribes eradication in the control areas had been performed during the period 1924-1929, inclusive. In protected area, 8 plots, comprising 4 acres, were established in 5 townships and the

white pines were carefully examined for infection. Out of a total of 2,698 pines, 683, or 30.9% were infected with 1,132 cankers. However, only 27 of these cankers, or 2.4%, originated since the application of control measures, even though the protection work had been conducted 5 to 10 years previous. Infection conditions in protected areas were also determined in 18 towns by examining all pines under 20 feet in height on 10.5 miles of road-wide strip lines. A total of 38% of the 10,856 pines on the strips were infected with 6,028 cankers, but only 2.6% of these infections had originated since the control work was performed.

In unprotected areas, studies were made during 1934 in 16 plots in 14 towns. The plots comprised 6½ acres. Blister rust had infected 2,300 white pines, or 57.5% of the 3,998 trees of this species. Most of the 4,566 cankers were of recent origin. In fact, over 39% of them originated during the period 1928 to 1932, which shows the danger of delaying protection work.

Total Cost of All Blister Rust Control Work, 1918-1936, Inclusive

<u>Source of Funds</u>	<u>Amount Spent</u>	<u>% Total</u>
State Blister Rust Appropriation.....	\$ 259,487.03	15.5)
Other State Appropriations.....	20,999.97	1.2)
Individuals.....	47,563.76	2.8)-
Towns.....	375,266.15	22.4)
Counties.....	987.00	0.1)
B.P.I.....	434,415.50	26.0)
B.E.& P.Q.....	8,628.60	0.5)
Forest Service.....	1,946.91	0.1)
E.C.W.....	133,278.23	8.0)-
P.W.A.....	68,597.21	4.1)
W.P.A.....	322,567.95	19.3)
Total.....	\$1,673,738.31	100.0

Expenditures from federal emergency funds since 1933 amount to 31.4 percent of the total cost.

The total expenditures for all control work include the cost of administration, supervision, blister rust control agent activities, Ribes eradication, field studies, pine and control area mapping, nursery sanitation, Ribes compensation and miscellaneous.

Relation of Total Cost of All Control Activities
To Total Commercial Value of White Pine

<u>Acreage of White Pine</u>	<u>Commercial Value of White Pine</u>	<u>Total Cost of All Control Activities 1918-1936*</u>	<u>Percentage of Total Commercial Value Represented by Cost Of All Control Work</u>
1,544,033	\$68,919,198	\$1,673,738.31	2.43**

*Includes cost of work on White Mountain National Forest.

**3.18 percent when figured on basis of \$5. stumpage value.

Comparison of Cost Per Acre Based on Ribes Eradication Costs Only and
on Cost of All Control Projects, 1918-1936, Inclusive
(White Mountain National Forest Project Included)

Ribes Per Acre	Cost Per Acre			
	Based on Ribes Eradication Costs Only		Based on Total Expenditures	
	1918-1936	Ave. Per Year	1918-1936	Ave. Per Year
16.3	.273	.014	.456	.024

Future Work

Complete initial Ribes eradication - 313,387 acres - pine plus protection zones (based on township estimates made by the district leaders in 1936). Reexamination of 1,812,953 acres that district leaders estimate now need to be reworked. Complete pine and control area mapping in 91 townships where no work of this type has been performed and in 118 other townships which have been partially mapped.

SLISTER RUST CONTROL IN VERMONT

The commercial range of white pine in Vermont covers most of the state, except the Green Mountain section in the central portion and the spruce region in Essex and Orleans counties. It occurs chiefly as farm woodlots, and is most abundant in the Connecticut River Valley along a strip a few miles wide extending from the Massachusetts line to Essex County. To lesser extent, similar conditions exist in the southern half of the Lake Champlain Valley. Vermont is becoming increasingly important as a summer and winter playground for tourists. Consequently, the scenic and recreational value of white pine probably equals or exceeds the commercial value.

Acreage and Commercial Value of White Pine
(Based on cartographical survey of 1926)

	Acreage	Value
Pure white pine (80-100% pine) - Over 6" DBH.....	29,923	\$ 3,351,376.
Under 6" DBH.....	73,453	1,836,325.
Mixed white pine (21-29% pine in mixture.....	76,415	2,195,620.
(30-79% pine in mixture.....	160,147	8,969,232.
Other types with scattered white pine stocking and restocking*.....	225,146	(1,576,022. Pine 291,793. Restocking)
White pine restocking in pure merchantable and mixed white pine types.....	71,587**	120,486.
Totals.....	567,034	\$18,339,854.

*Includes those "other types" which have 1-20% pine (above restocking size), but do not contain white pine restocking.

**This acreage not included in total as it is already listed under pure and mixed white pine types.

Basis for estimating value of white pine: merchantable stumpage figured at normal value of \$7 per M - average contents per acre, pure merchantable white pine = 16 M bd. ft.; mixed white pine, 21-29% = 4 M bd. ft.; mixed white pine, 30-79% = 8 M bd. ft.; and white pine, above restocking size in other types = 1 M bd. ft. Pure stands of white pine under 6" DBH given normal value of \$25 per acre. Estimated normal per acre value of white pine restocking: degree of restocking, light = \$1, medium = \$2, heavy = \$3.

Stumpage prices under present conditions range from \$4 to \$8 per thousand board feet. This is, however, a temporary situation which should return to normal when economic conditions improve.

Since 1931, a total of 339,975 white pines have been distributed from the state nursery for reforestation purposes.

Ribes Conditions

Ribes are generally distributed throughout the state, occurring most abundantly in the Connecticut River Valley, in the Champlain Valley, and in a belt extending across the north-central part of the state. An average of 20.5 bushes per acre were eradicated on the 441,170 acres worked during 1918 to 1936, inclusive.

Pine Infection Conditions

Infection on white pine is general throughout its commercial range, being especially plentiful in the northern Connecticut River Valley region. Based on township units, the percent of diseased trees ranges from 1-30 percent of the total amount of pine. Also, see strip line data under "Surveys". Considerable new infection has occurred in unprotected areas during recent years. Damage to merchantable size trees is particularly abundant and conspicuous in Caledonia County.

Policy

Under the regular program the state has cooperated with individual owners who paid all eradication costs, except excess labor charges for state foremen and their transportation between jobs. In a few instances, town money has been obtained to pay the excess labor charges or transportation of crews. During 1933-1936, the regular cooperative work was necessarily curtailed due to the activities conducted under the E.C.W., P.W.A. and W.P.A. Programs. All work conducted under these emergency programs was directed by the district blister rust control leaders with the assistance of technical foremen and supervisors.

Informational and Service Activities of Permanent and Temporary Agents, 1923-1936

Informational

Meetings addressed.....	397	Publications distributed.....	30,655
Attendance.....	18,820	Mimeo. articles dist. (1928-1934)*.	192
Field demonstration meetings**.	387	Items published.....	478
Attendance**.....	4,556	Posters and signs placed*.....	7,561
Displays placed.....	573	Roadside dem. placed (1930-1934)***	16

Service

Initial interviews.....	10,946	Persons instructed in field.....	8,752
Follow-up calls.....	7,136		

*No record kept of these items after April 30, 1934.

**Included with "Meetings Addressed" after April 30, 1934.

***Included with "Displays Placed" after April 30, 1934.

Town and Individual Cooperation in Blister Rust Control Work

During the period 1918-1936 inclusive, a total of \$10,909.66 was expended from 14 town appropriations and 19 town allotments, and 2304 individual cooperators spent \$71,209.37 for control work on their properties. The individual expenditures include \$86.25 spent during 1926 and 1933 for Ribes compensation to 10 owners for the removal of 181 cultivated bushes.

Results of Ribes Eradication Work, 1918-1936, Inclusive (Initial and Re-eradication)

Program	Acreage Worked	Ribes Pulled		Cost				Per Acre	
		Wild	Cult.	State	Towns	Indiv.	Govt.	Total	Cost
Regular	224,528	2,296,089	11,119	16,439.13	1077.91	71,123.12	6,147.15	94,787.31	.422
E.C.W.	53,967	2,625,281	355	-	-	-	44,383.86	44,383.86	.822
P.W.A.	26,537	474,945	-	20.00	120.00	-	20,594.05	20,734.05	.781
W.P.A.	136,140	3,638,888	2,403	280.84	9,711.75	-	136,927.43	146,920.02	1.08
Total	441,170	9,035,203	13,877	16,739.97	10,909.66	71,123.12	208,052.49	306,825.24	.695

This summary excludes the special nursery sanitation work during the period 1930-1936 inclusive, when a separate record was kept of such control work.

The cost of the Ribes eradication projects includes owners' labor (valued at 40 cents per hour) and actual expenditures by all agencies for wages of laborers, scouts, and foremen employed in locating and pulling Ribes - cost of crew transportation, and miscellaneous expenses for trail paper, picks, etc. In the case of the E.C.W. enlisted personnel, the cost of their total time on Ribes eradication work was figured at the rate of \$1.35 per eight hour day in 1933, \$1.40 in 1934, and \$1.50 in 1935 and 1936.

Control was conducted from 7 C.C.C. camps during 1933, 6 camps in 1934, 3 camps in 1935, and 5 camps in 1936.

Results of First Re-eradication of Ribes, 1923-1936, Inclusive
(Excludes nursery sanitation work, 1930-1936, inclusive)

Program	Acreage Re-Worked	Ribes Pulled		Total Cost	Per Acre	
		Wild	Cult.		Cost	Ribes
Regular	32,627	159,163	833	10,671.76	.327	4.9
E.C.W.	18,856	394,187	88	15,814.86	.839	20.9
P.W.A.	8,694	108,580	-	5,873.52	.676	12.5
P.P.A.	43,257	817,434	494	39,956.24	.924	18.9
Total	103,434	1,479,364	1,415	72,316.38	.699	14.3

No satisfactory comparison can be made between the per acre values listed in the two preceding tables, since only 30.6 percent of the area initially protected has been reworked and such re-examinations were usually restricted to the Ribes sites.

Status of Ribes Eradication Work - December, 1936

Program	Acreage of Control Area	Acreage of Control Area Worked	Percentage of Control Area Worked	Acreage Still in need of Protection
Initial	662,467	337,736	51.0	324,731
Re-Erad.	212,914	103,434	48.6	109,480

The total control area for the initial work comprises the acreage initially cleared of Ribes plus the estimated acreage still in need of initial protection. The latter figure was based on township estimates made by the district leaders at the close of 1936. The control area for the re-eradication projects includes the total area re-examined for Ribes plus the estimated acreage now in need of re-eradication work.

Nursery Sanitation

Exclusive of the state nursery, which has been protected from blister rust, there are only two commercial nurseries growing white pines and each of these nurseries contain less than 100 ornamental pines.

Ribes Eradication Work at the Essex Junction State Nursery, 1930-1936, Inclusive.

Acreage Worked (All re-eradication)	Ribes Pulled		Total Man Days	Total Cost	Per Acre		
	Wild	Cult.			Cost	Ribes	Man Days
2,230	4,839	75	409	1,284.18	.576	2.2	.18

Since 1930, a separate record has been kept of all nursery sanitation work and the data have not been included in the regular Ribes eradication summaries. Due to the fact that the available data are incomplete for such control work prior to 1930 no accurate total summary can be made for this project. However, a summary (based on estimates in some instances) supplied by the assistant state forester shows that during the period 1925-1929, a total of 700 acres were reworked at the state nursery at a cost of \$479.64. Only five wild Ribes were found. During 1930, this nursery was granted a permit to ship white pines interstate under regulations specified in Federal Quarantine 63.

Ribes Nigrum Elimination

A special black currant survey was begun in two districts during the fall of 1928 and continued during 1929. Such work was completed in 20 townships and partially finished in 3 others. A total of 224 Ribes nigrum were located and 183 were destroyed. Black currant elimination work has not been conducted as a special project in Vermont since 1929.

Cultivated Ribes Compensation

Total number of cultivated Ribes destroyed..... 13,952
Total number of bushes paid for..... 1,646
Number of persons paid compensation..... 133
Amount paid in reimbursement.....\$792.91

These data include \$86.25 compensation paid by individual cooperators to 10 owners of cultivated Ribes for the removal of 181 bushes.

Surveys

(1) White pine areas of state - roughly mapped during early years of control program. (2) Strip line infection survey made in 1920. The pines on rod wide strips totaling 28 miles in length were examined - a total of 4,002 pines was inspected and 3.1 percent found diseased. (3) Production, value, and use of white pine and other woods - data summarized for entire state, and published in bulletin form. (4) Epidemiology survey of white pine and other forest types, Ribes and infection conditions made during 1926. Maps and summaries prepared at Regional Office. (5) During 1933-1936, detailed pine and control area mapping was conducted during the late fall, winter, and early spring months under the W.P.A., P.W.A. and E.C.W. Programs. The following table summarizes the results of this mapping work by programs.

Pine and Control Area Mapping in Vermont, 1933-1936

Program	Period	Acreage Mapped	Acreage Examined But Not Mapped	Miles Boundary Lines Painted	Total Man Days	Total Cost
E.C.W.	1933-36	67,144	18,770	-	583	3,685.84
P.W.A.	1933-35	81,490	163,900	-	668	2,971.46
W.P.A.	1935-36	515,589	596,991	415	5,846	24,359.94
Total	-	664,223	779,661	415	7,097	31,017.24

Pine and control area mapping has been completed in 57 townships and partially

finished in 16 others. No detailed mapping has been performed in 114 townships. It is estimated that 8,181 man days of work will be required to complete the mapping project.

Plot Studies

Demonstration control areas at Thetford and Fairlee, Vermont - preliminary reports submitted - no follow-up work done. Ribes regrowth studies made by Merrill, and reported at 1927 annual conference. Blister rust damage study of merchantable pine made by Filler at Waterford, Vermont - report prepared and published. - Area rechecked during 1935. During 1927, six quarter-acre infection plots laid out by district leaders. Also, in cooperation with extension forester, six permanent demonstration plots were established to show white pine thinning and protection. Seven additional demonstration plots in 6 towns were laid out in 1928. During the fall of 1928 and spring of 1929, pine infection studies were made by the district leaders in 14 Vermont towns to determine the effectiveness of the control work. These data were compiled at the Regional Office and copies of the summaries sent to the Forest Commissioner and to the Washington Office - data used for informational purposes. Additional effectiveness of control and blister rust damage studies were made by Rose during 1932-1934.

Total Cost of All Blister Rust Control Work, 1918-1936, Inclusive.

<u>Cooperating Agency</u>	<u>Amount Spent</u>	<u>% Total</u>	
State B.R. Appropriation.....	\$54,890.93	10.1	} 25.2%
Individuals.....	71,209.37	13.1	
Towns.....	10,909.66	2.0	
B.P.I.	119,598.94	21.9	} 74.8%
B.E. and P.Q.	4,274.35	0.8	
E.C.W.	59,214.79	10.9	
P.W.A.	32,168.20	5.9	} By Govt.
W.P.A.	191,800.26	35.3	
Total	<u>\$543,866.50</u>	<u>100.0</u>	

Expenditures from federal emergency funds since 1933 amounted to 52.1 percent of the total cost.

The total expenditures for all control work include cost of administration, supervision, blister rust control agent activities, Ribes eradication, field studies, pine and control area mapping, nursery sanitation, black currant elimination, Ribes compensation, and miscellaneous.

Relation of Total Cost of All Control Activities to Total Commercial Value of White Pine.

<u>Acreage of White Pine</u>	<u>Commercial Value of White Pine</u>	<u>Total Cost of All Control Activities 1918-1936, Incl.</u>	<u>Percentage of Total Commercial Value Represented by Cost of All Control Work</u>
567,084	\$18,339,854.	\$543,866.50	3.0

Comparison Between Cost Per Acre Based on Ribes Eradication Costs Only and
on Cost of All Control Projects, 1918-1936, Inclusive.

Ribes Per Acre	Cost Per Acre			
	Based on Ribes Eradication Costs Only		Based on Total Expenditures	
	1918-1936	Ave. Per Year	1918-1936	Ave. Per Year
20.5	.695	.037	1.23	.065

Future Work

Complete initial Ribes eradication, 324,731 acres - pine plus protection zones (based on township estimates made by the district leaders at close of 1936). Re-examination of 109,480 acres that district leaders estimate now need to be re-worked. Complete pine and control area mapping in 114 townships where no work of this type has been performed and in 16 other townships which have been partially mapped.

BLISTER RUST CONTROL IN MASSACHUSETTS

The commercial range of white pine covers the entire state of Massachusetts. This species occurs chiefly as farm woodlots and is most abundant in Worcester and Plymouth Counties. For example, in the township of Norwell, a few miles south of Boston, 89 percent of the land area is covered with forest growth and 69 percent of this forest area consists of white pine. Many sections of these two counties are on a sustained yield basis. The pines in Plymouth County are usually cut into four foot lengths and transported to the local mills which have been in operation in some instances for more than 100 years. In northern Worcester County, the pine lumber is manufactured locally into pails, boxes, toys, etc. In the western third of the state and in portions of southern Worcester County, white pine frequently exists in mixture with hardwoods. The scenic and recreational value of white pine probably equals or exceeds the commercial value and is particularly important in eastern Massachusetts and in parts of the Berkshires where numerous estates have been established.

Acreage and Commercial Value of White Pine
(Based on cartographical survey of 1926)

	<u>Acreage</u>	<u>Value</u>
Pure white pine (80-100% pine)-{Over 6" DBH.....	162,113	\$18,156,656
(Under 6" DBH....	288,686	7,217,150
Mixed white pine-{21-29% pine.....	63,765	1,785,420
(30-79% pine.....	273,266	15,302,896
Other types with scattered white pine stocking and restocking*.....	170,734	{1,195,138-Pine stocking 289,617-Restocking
White pine restocking in pure merchantable white pine and mixed white pine types.....	162,351**	310,135
Totals.....	958,564	\$44,257,012

*Excludes those "other types" which have 1-20% white pine (above restocking size), but do not contain white pine restocking.

**This acreage not included in total as it is already listed under pure and mixed white pine types.

Basis for estimating value of white pine: merchantable stumpage figured at value of \$7 per M - average contents per acre, pure merchantable white pine - 16 M bd.ft.; mixed white pine, 21-29% - 4 M bd.ft.; mixed white pine, 30-79% - 8 M bd.ft.; and white pine, above restocking size, in other types - 1 M bd.ft. Pure stands of white pine under 6" DBH given normal value of \$25 per acre. Estimated normal per acre value of white pine restocking: degree of restocking, light - \$1, medium - \$2, heavy - \$3.

Stumpage prices under present conditions range from \$4 to \$8 per thousand board feet. This is, however, a temporary situation which should return to normal when economic conditions improve.

Since 1931, a total of 5,729,000 white pines have been distributed from the state nurseries for reforestation purposes.

Wild Ribes Conditions

In the eastern part of the state, the Ribes are relatively few and localized, except in northern Worcester County where heavy concentrations of skunk currants occur in the swamps and along streams. Ribes are general and fairly abundant in the western third of the state. An average of 7.2 bushes per acre have been destroyed on the 2,875,744 acres cleared of Ribes during the period 1918-1936, inclusive.

Pine Infection Conditions

Blister rust infection is general on white pines throughout the state. It is heaviest in the counties of Essex, Plymouth, northern Worcester, southern Berkshire, and in several scattered towns in the other counties. There are 70 major centers of infection. In the remainder of the state, infection occurs as scattering or isolated spots. To date, diseased pines have been found in all of the 355 townships of the state, except in the City of Chelsea and in two of the five townships on Martha's Vineyard.

Policy

Under the regular program, control work was performed chiefly in cooperation with individual owners. State scouts were used to examine control areas for Ribes, to eradicate such bushes in portions where they were few, and to designate those sections requiring intensive control measures by the pine owners under the direction of state foremen. During 1933-1936, the regular cooperative work was necessarily curtailed due to the activities conducted under the E.C.W., P.W.A., E.R.A., C.W.A. and WPA Programs. All work carried on under these emergency programs was directed by the district blister rust control leaders with the assistance of technical foremen and supervisors.

Informational and Service Activities of Permanent and Temporary Agents
1923-1956

Informational

Meetings addressed.....	453	Publications distributed*.....	150,907
Attendance.....	28,853	Mimeo.articles dist.(1928-1934)*..	2,445
Field demonstration meetings**..	457	Items published.....	2,080
Attendance**.....	3,392	Posters and signs placed*.....	3,116
Displays placed.....	706	Roadside dem.placed (1930-1934)***	106

Service

Initial interviews.....	31,744	Persons instructed in field....	11,874
Follow-up calls.....	11,661		

*No record kept of these items after April 30, 1934.

**Included with "Meetings addressed" after April 30, 1934.

***	"	"	"Displays placed"	"	"	"	"
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Town and Individual Cooperation in Blister Rust Control Work

During 1920 and 1921, four town appropriations, totaling \$1,700.00, were made for control work in Massachusetts. In 1935 and 1936, fifteen town contributions, amounting to \$6,872.70, were made chiefly for crew transportation under the W.P.A. Program. Since 1918, a total of 21,016 individual cooperators have expended \$93,891.39 for control activities in the state, including nursery sanitation and black currant elimination.

Results of Ribes Eradication Work, 1918-1936, Inclusive

(Initial and Reeradication)

	Total Acreage Worked	Ribes Pulled		Total Man Days	Cost				Per Acre	
		Wild	Cult.		Local Coop.	State	Govt.	Total	Cost	Ribes
Total	2,253,310	13,845,787	247,775	100,509	\$87,543.61	\$212,342.65	\$23,106.93	\$322,993.19	.143	6.1
Regular	51,741	1,227,478	3,297	24,255	-	-	36,590.56	36,590.56	.707	23.7
C.C.C.	97,761	1,001,221	1,254	5,677	3,662.40	218.54	19,632.06	23,513.00	.241	10.2
W.P.A.	168,025	2,306,153	17,849	30,190	6,809.90	1,945.22	119,057.91	127,813.03	.761	13.7
Individual	2,907	79,133	303	2,528	-	-	10,998.20	10,998.20	3.78	27.2
Total	2,578,744	18,459,772	270,481	163,159	\$98,015.91	\$214,506.41	\$209,385.66	\$521,907.98	.203	7.2

Excludes special nursery sanitation work during the period 1930-1936, inclusive, when separate records were kept for this project - also excludes special black currant eradication work since 1929.

The cost of the Ribes eradication project includes owners' labor (valued at 40 cents per hour) and all expenditures for wages of laborers, scouts and foremen employed in locating and pulling Ribes - cost of crew transportation, and miscellaneous expenses for trail paper, picks, etc. In the case of the E.C.W. personnel, the cost of their total time on Ribes eradication work was figured at the rate of \$1.35 per eight-hour man day in 1933, \$1.40 in 1934, and \$1.50 during 1935 and 1936.

Control work was performed from 12 C.C.C. Camps during 1933, 9 camps in 1934, and 10 during 1935 and 1936.

Results of First Reeradication of Ribes, 1923-1936, Inclusive

(Excludes special black currant elimination and nursery sanitation, 1930-1936, Incl.)

	Total Acreage Reworked	Ribes Pulled		Total Man Days	Total Cost	Per Acre		
		Wild	Cult.			Cost	Ribes	Man Days
Regular	470,277	807,597	9,408	13,583	\$ 44,740.11	.095	1.7	.03
C.C.C.	17,304	294,509	614	9,018	13,605.81	.786	17.0	.52
W.P.A.	88,740	222,168	1,116	3,126	12,794.41	.144	2.5	.04
Individual	91,671	1,442,158	3,908	18,906	81,530.53	.889	15.7	.21
Total	2,897	78,562	308	2,513	10,934.60	3.77	27.1	.87
Total	670,889	2,844,994	15,352	47,146	\$163,605.46	.244	4.2	.07

No satisfactory comparison can be made between the per acre values listed in the preceding two tables, since only 35.3 percent of the area initially protected has been reworked and such reexaminations were usually restricted to the Ribes sites.

Status of Regular Ribes Eradication Work - December, 1956

Type of Work	Acreage of Control Area	Acreage of Control Area Worked	Percentage of Control Area Worked	Acreage in Need of Protection
Initial	1,957,840	1,902,855	97.2	54,985
Reerad.	1,793,784	670,889	37.4	1,122,895

The "control area" for the initial work comprises the acreage initially cleared of Ribes plus the acreage still in need of such protection work. The latter figure was based on township estimates made by the district leaders at the close of 1936. The "control area" for the reeradication projects includes the total area reexamined for Ribes plus the estimated acreage now in need of reeradication work.

Ribes Eradication Work in Connection with Nursery Sanitation Project
1930-1936, Inclusive

Type of Work	Acreage Worked	Ribes Pulled		Total Man Days	Total Cost	Per Acre		
		Wild	Cult.			Cost	Ribes	Man Days
Initial eradication	723	30,369	112	139	\$ 558.93	.773	42.0	.19
Reeradication	3,956	4,405	179	813	3,534.44	.895	1.1	.21
Total	4,679	34,774	291	952	\$4,093.37	.875	7.4	.20

All nurseries growing white pines for public sale were cleared of Ribes prior to 1925. No separate records are available for this work. During 1925 and 1926, a special survey was conducted to eradicate all Ribes nigrum from within a mile of all pine growing nurseries. In this work, a total of 217 Ribes nigrum, 319 flowering currants, and 20 other cultivated Ribes were destroyed.

In 1927 and 1928, the protection zones were increased from 900 feet to 1500 feet. The policy of the state since that time has been to establish Ribes free conditions in the environs of only the more important white pine producing nurseries. It is believed that the expenditures necessary for the establishment and maintenance of such zones around any additional nurseries would not be justified because of the relatively limited number of white pines produced. The pines in the state nurseries and the important commercial nurseries are examined annually by representatives of the Division of Plant Pest Control. Each year a few infected pines have been found.

Prior to 1930, the nursery sanitation work was included in the regular Ribes eradication records. An incomplete summary, furnished by the state leader (based on estimates in several instances) shows that during the period 1925-1929, inclusive, a total of 15,450 acres were examined, 5,662 wild Ribes and 5,136 cultivated bushes being eradicated at a total cost of \$8,678.75. Of this total, 4,625 acres consisted of reeradication work during which 21 wild and 648 cultivated Ribes were removed at a cost of \$918.90.

An inspection was made of the environs of the state nurseries by representatives of the Division of Blister Rust Control during the fall of 1932. As a result of this examination, the environs of two of the state nurseries were reworked for Ribes in 1933. Future sanitation work around commercial nurseries will be limited to reexamination of the environs of those nurseries which have already been initially protected.

Status of Nursery Sanitation Work - December, 1936

No. Nurseries Where Protection Established and Being Maintained			No. Nurseries Protected During 1936	No. White Pines Existing During 1936 in Nurseries Protected That Year
State	Private	Maximum Acreage in Control Areas		
4	4	3,225	2	591,150

In addition to the eight nurseries which are maintaining sanitation zones in the state, 13 additional nurseries established such zones prior to 1936, but abandoned them for various reasons.

Ribes Nigrum Elimination

Several thousand cultivated black currants were destroyed in Massachusetts during 1917 in connection with a state-wide cultivated Ribes census. During the period 1918-1926, black currants were eradicated in conjunction with the regular control work. In 1927, a special regulation was made effective prohibiting the possession of Ribes nigrum in the state, and a systematic campaign was begun to eliminate such bushes. However, during the years 1927 to 1929, this special project was conducted in conjunction with the regular field work and the records were not kept separately. From 1930 to 1936, inclusive, this black currant work was performed strictly as a separate project. At the end of 1936 this project had been completed in all townships on the mainland of the state, except in the city of Worcester. The results of this black currant elimination work are summarized in the following table.

Ribes Nigrum Elimination, 1930-1936

No. Properties Contacted	No. Patches Located	No. Ribes Nigrum Pulled	Total Man Days	Cost						
				Indiv.	State	B.P.I.	P.W.A.	W.P.A.	C.W.A.	Total
822,425	6,077	40,627	6,594	\$3,271.80	\$20,409.85	\$100.00	\$550.04	\$1,712.75	\$2,688.11	\$28,732.55

White Pine Blister Rust Canker Elimination

Under the C.W.A. Program during the winter of 1933-1934, canker elimination work was conducted in three of the control districts; 4,341 acres of pine being examined on municipally-owned lands. A total of 17,305 pines with stem cankers were destroyed, and 17,511 branch infections were pruned from 12,784 other pines. This project consumed 5,409 man days and cost \$24,255.74. The work was handicapped by an unusually severe winter and the inexperience of the personnel.

Cultivated Ribes Compensation, 1918-1936

Total number of cultivated Ribes pulled.....	311,599
Total number of bushes paid for.....	41,796
Number of persons paid compensation.....	662
Total amount paid in reimbursement.....	\$14,866.65

(These data include \$5,665.05 paid in 1918 to 253 persons for 16,517 bushes destroyed in 1917 and 1918, mostly in 1917. It is not possible to separate the 1917 data.)

Surveys

Cultivated Ribes census throughout entire state in 1917 - data compiled and a summary report prepared - used as a basis for inspections and eradication of Ribes nigrum. During 1920, strip line infection survey was made - the pines on a rod-wide strip totaling 4.4 miles in length were examined - a total of 871 pines were inspected and 5.7 percent were found infected - 9 plots, totaling 3 acres, were laid out adjacent to the strips; 27 percent of the 637 pines in these plots were diseased. An epidemiology survey was made by the district leaders during 1926 of white pine and other types, Ribes and infection - maps and summaries prepared at Regional Office. During 1933-1936, pine and control area mapping was conducted under the P.W.A., W.P.A. and C.W.A. Programs. The results of this mapping work are summarized in the following table.

Pine and Control Area Mapping

Program	Period	Acreage Mapped	Acreage Examined but Not Mapped	Miles Boundary Lines Painted	Man Days	Total Cost
P.W.A.	1933-35	20,654	18,485	44	537	\$ 2,893.14
W.P.A.	1935-36	166,498	189,128	310	4,040	19,569.31
C.W.A.	1933-34	45,767	34,138	-	592	3,112.25
Totals	-	252,913	241,751	354	5,169	\$25,379.70

Pine and control area mapping has been completed in 92 townships and partially finished in 150 others. No detailed mapping has been performed in 42 townships. It is estimated that 18,703 man-days of work will be required to complete the mapping project.

Field Studies Other Than Surveys

Demonstration control areas established at Barre and Pembroke. Pine infection study made by Root at Pembroke, also infection studies made by Pickler at Sandisfield, and by Hodgkins at Swanzey - reports submitted. Cutting out of cankers studies made by Martin at Ipswich, and by Hodgkins at Pembroke - published report by Martin. Damage plots laid out by district leaders in western Massachusetts - used for demonstration and informational purposes. Sample forest type map made of Duxbury, used as basis for control work. Study on spread of disease from skunk

curren't started by Clave during 1927 - report presented at annual conference showed only limited spread from such Ribes. Since 1928 District Leaders Clave and Deane have conducted experiments to determine the effectiveness of certain chemicals in killing Ribes - preliminary reports have been given at the annual conferences. In 1932, additional chemical eradication plots were made in these two leaders' districts under the supervision of Plunguian. Five of the Massachusetts leaders, including the state leader, cooperated in a study to determine the immunity of the Viking currant to blister rust infection. Also, since 1933, a few additional plot studies were made of blister rust damage, and Plunguian's chemical eradication plots were rechecked.

Total Cost of All Blister Rust Control Work, 1918-1936, Inclusive

<u>Source of Funds</u>	<u>Amount Spent</u>	<u>% Total</u>
State Blister Rust Appropriation.....	\$ 234,822.39	22.9)
Other State Appropriations.....	51,506.41	5.0)
Individuals.....	93,891.39	9.2)
Towns.....	8,571.92	0.8)
B.P.I.....	323,305.88	31.6)
B.E.&P.Q.....	8,970.66	0.9)
E.C.W.....	45,164.03	4.4)
P.W.A.....	52,071.89	5.1)
W.P.A.....	163,955.50	16.0)
C.W.A.....	31,134.08	3.0)
E.R.A.....	10,998.20	1.1)
Total.....	\$1,024,390.35	100.0

Expenditures from Federal Emergency funds since 1933 amounted to 29.6 percent of the total cost.

The total expenditures for all control activities include cost of administration, supervision, blister rust control agent activities, Ribes eradication, field studies and surveys, nursery sanitation, black currant eradication, pine and control area mapping, Ribes compensation, and miscellaneous.

Relation of Total Cost of All Control Activities
to Total Commercial Value of White Pine

<u>Acreage of White Pine</u>	<u>Commercial Value of White Pine</u>	<u>Cost of All Control Activities 1918-1936, Incl.</u>	<u>Percentage of Total Commercial Value Represented by Cost of All Control Work</u>
958,564	\$44,257,012	\$1,024,390.35	2.3

Comparison Between Cost Per Acre Based on Eradication Costs Only
and on Cost of All Control Projects. 1918-1936, Inclusive

Ribes Per Acre	Cost Per Acre			
	Based on Ribes Eradication Costs Only		Based on Total Expenditures	
	1918-1936	Ave. Per Year	1918-1936	Ave. Per Year
7.2	.203	.011	.598	.021

Future Work

Complete initial eradication, 54,985 acres - pine plus protection zones - (Based on township estimates made by state and district leaders). Reexamination of 1,793,784 acres that leaders estimate now need to be reworked. Complete Ribes nigrum eradication in City of Worcester. Make additional studies to determine effectiveness of control. Maintain Ribes free conditions in the environs of pine growing nurseries. Complete pine and control area mapping in 42 townships where no work of this type has been performed and in 150 other townships which have been partially mapped.

WHITE PINE REPRODUCTION IN RHODE ISLAND

Most of the important white pine areas in Rhode Island are located in the western half of the counties of Kent and Providence. However, in the eastern part of these counties and in northern Washington county considerable pine reproduction occurs in brush and hardwood types. Consequently, a large part of these three counties may be classed as pine areas or potential pine land. The public and private interest in white pine for re-forestation purposes is evidenced by the planting of 1,038,730 trees of this species during the period 1929 to 1936. Most all of these pines were purchased from out of state nurseries. In the western part of Rhode Island, white pine has considerable scenic and recreational importance. The following table shows the acreage and commercial value of the white pine based on a cartographical survey made in 1926. Admittedly the amount of white pine reproduction occurring in brush and hardwood types is under-estimated.

Acreage and Commercial Value of White Pine

	<u>Acreage</u>	<u>Value</u>
Pure white pine (80-100% pine - (Over 6" DBH	13,343	1,494,416.
(Under 6" DBH.....	436	10,900.
Mixed white pine - (21-29% pine in mixture.....	0	0
(30-79% " " "	0	0
Other types with scattered white pine		
stocking and restocking(1).....	59,417	(415,919. Stock
		(80,818. Resto
Totals.....	73,196(2)	\$2,002,053.

(1) Excludes those "other types" which have 1-20% white pine (above restocking size), but do not contain white pine restocking.

(2) There is also a large acreage of potential pine land.

Basis for estimating value of white pine: merchantable stumpage figured at normal value of \$7 per M - average contents per acre, pure merchantable white pine = 15 M bd. ft.; and white pine, above restocking size in other types = 1 M bd. ft. Pure stands of white pine under 6" DBH given normal value of \$25 per acre. Estimated normal per acre value of white pine restocking; degree of restocking, light = \$1, medium = \$2, heavy = \$3.

Ribes Conditions

Wild Ribes are few and localized, averaging only 0.9 of a bush per acre on the 552,062 acres worked to date. Such bushes are confined chiefly to the following sites: roadsides, cellar holes, fence rows, swamps, and stream courses.

Pine Infection Conditions

Spot infections, many from cultivated black currants - some of the infections have been cut out. Scouting during 1934 revealed 30 new spot infections in white pine. From one to several trees were diseased in each of these locations. Many of the infections were of recent origin, showing the need for re-eradication work at that time.

Policy

Under the regular program up to 1929, all control work was performed by state agents, since the wild Ribes were few and localized. During the period 1929-1931, inclusive, control activities were confined to the elimination of Ribes nigrum. Since 1933, the regular work has been necessarily curtailed due to the activities conducted under the

Emergency Programs. All of the control work prior to 1935 was directed by the state blister rust control leader, and since that time by Mr. A. C. White, employed part time on federal funds. These men were assisted by technical foremen and supervisors.

Results of Informational and Service Activities, 1923-1936, Inclusive

Informational

Meetings addressed.....	219	Publications distributed*.....	35,351
Attendance.....	17,222	Mimeo.articles dist.(1928-1934)..	2,250
Displays placed.....	108	Items published.....	390
		Posters and signs placed*.....	2,104

Service

Initial interviews.....	3,215	Persons instructed in field.....	586
Follow-up calls.....	2,661		

*No record kept of these items after April 30, 1934.

Individual Cooperation in Blister Rust Control Work

No local cooperation was solicited except in 1918, 1923, and 1924 when eight individuals provided \$581.36 for control activities.

Results of Ribes Eradication Work, 1918-1936, Inclusive (Initial and Re-Eradication)

This summary excludes the special nursery sanitation work from 1932-1936, Inclusive.

Program	Acreage Worked	Ribes Pulled		Total Man Days	Cost			Per Acre		
		Wild	Cult.		State	Govt.	Total	Cost	Ribes	Days
Regular	290,064	200,475	12,356	10,074	21,645.57*	10,592.78**	32,238.35	.111	0.7	.03
C.W.	190,027	180,238	5,889	35,314	15.00	55,308.33	55,323.33	.291	0.9	.19
P.W.A.	12,761	47,112	407	1,580	389.28	6,655.76	7,045.04	.552	3.7	.12
P.A.	36,841	41,263	2,553	6,192	294.73	23,426.57	23,721.30	.644	1.1	.17
R.A.	2,369	6,177	-	465	-	1,640.00	1,640.00	.692	2.6	.20
Totals	532,062	475,265	21,305	53,625	22,344.58	97,623.44	119,968.02	.225	0.9	.16

*Includes \$581.36 individual funds. **B.P.I. funds.

The cost of the Ribes eradication project covers all expenditures for the wages of laborers, scouts, and foremen employed in locating and pulling Ribes-cost of crew transportation, and miscellaneous expenses for trail paper, picks, etc. In the case of the E.C.W. personnel, the cost of their total time on Ribes eradication work was figured at the rate of \$1.35 per eight hour man day in 1933, \$1.40 in 1934, and \$1.50 during 1935 and 1936.

Control work was conducted from 3 C.C.C. camps during 1933, 2 in 1934, 6 in 1935, and 4 during 1936.

Results of First Re-Eradication of Ribes, 1923-1936, Inclusive.

Program	Acreage Re-Worked	Ribes Pulled		Total Man Days	Total Cost	Per Acre		
		Wild	Cult.			Cost	Ribes	Days
Regular	16,885	10,408	75	646	2,072.71	.123	0.6	.04
E.C.W.	163,690	166,578	5,569	30,669	48,071.99	.294	1.0	.16
P.W.A.	12,761	47,112	407	1,580	7,045.04	.552	3.7	.12
P.A.	32,642	37,176	2,110	5,466	20,787.82	.637	1.1	.17
R.A.	2,369	6,177	-	465	1,640.00	.692	2.6	.20
Totals	228,347	267,449	8,161	38,826	79,617.53	.349	1.2	.17

No satisfactory comparison can be made between the per acre values listed in the two preceding tables since only 75.2 percent of the area initially protected has been reworked, and such activities were usually restricted to the Ribes sites. Also, the re-eradication work has been performed by Emergency crews in strip formation.

Status of Regular Ribes Eradication Work - December, 1936

Program	Acreage of Control Area	Acreage of Control Area Worked	Percentage of Control Area Worked	Acreage Still In Need of Protection
Initial	332,675	303,715	91.3	28,960
Re-Erad.	291,895	228,347	78.2	63,548

The control area for the initial work consists of the total acreage initially cleared of Ribes in the state plus the acreage still in need of protection. It includes both the total pine area and potential pine areas.

The control area for the re-eradication program is based on the total area reworked up to 1936, inclusive, plus the acreage which now needs re-examination.

Nursery Sanitation

There are 11 commercial nurseries growing ornamental white pine in the state, but in 1936 only one of these had more than 500 such trees. Each of the others had less than 100 white pines. During 1932, sanitation zones were established around 6 of the pine-growing nurseries. The environs of these six nurseries were re-examined for Ribes during 1933, 1934 and 1935. In 1936, five of these nurseries were again reworked. The results of this sanitation work during the period 1932-1936, inclusive, were as follows:

Type of Brad.	Acreage Worked	Ribes Pulled		Cost					Per Acre	
		Wild	Cult.	State	B.P.I.	P.W.A.	E.C.W.	Total	Cost	Ribes
Initial	1,190	133	520	343.56	162.87	-	-	506.43	.426	0.1
Re-Erad.	9,564	4,728	182	755.62	-	150.00	102.29	1007.91	.105	0.5
Total	10,754	4,861	702	1099.18	162.87	150.00	102.29	1514.34	.141	0.5

Black Currant Eradication

A state law prohibits the possession of such bushes in the state. A survey to locate Ribes nigrum was completed in two towns in 1927. These bushes were eradicated in 1928. During 1929, 1930, and 1931, all control work in the state was limited to the systematic eradication of Ribes nigrum. The work was continued during 1932 and 1933, and the project was completed for the entire state. As a result of this work, 16,219 black currants and 1093 other cultivated Ribes were destroyed at a total cost of \$10,327.88.

Cultivated Ribes Compensation, 1918-1936

Total number of cultivated bushes destroyed.....	39,219
Total number of bushes paid for	1,410
Number of persons paid compensation.....	58
Total amount paid in reimbursement... ..	\$509.79

Surveys

A rough survey of white pine areas in state was made by Sheals in 1920. This information has been used for control and informational purposes. During 1926, a cartographical survey was completed of white pine and other types, Ribes and infection conditions - these data summarized at the Regional Office. A survey of the production of white pine and other woods in the state during 1925 was made by Anderson. Report prepared and published in News Letter. During 1928, Hurford began a survey to map the location of white pine and other forest types, and to estimate their contents. Two townships (Coventry and West Greenwich) were completed during 1928. Due to pressure of other work, this project was limited since 1929 to the field mapping of forest areas in the townships of North Providence, Lincoln, and Cumberland. A few towns were partially mapped. During 1931, a special survey was made of 16 plantations established during 1929 and 1930 with white pine stock from an out-of-state nursery. Of the 44,939 pines examined, 1,355 or 3 percent were found to be infected with a total of 1,373 blister rust cankers. Data taken on the age of the cankers (determined by age of wood on which infection occurred) showed that in all cases the infections developed before the pines were shipped from the nursery. State officials took immediate action to prevent further shipments of white pine into Rhode Island from this nursery, and the nurseryman has cooperated to the fullest extent in offering to replace the infected stock with some other species according to the wishes of the individual planter. During 1933-1936, pine and control area mapping was carried on under the E.C.W., W.P.A. and P.W.A. Programs during the late fall, winter and early spring months. Up to December 31, 1936, a total of 180,900 acres were mapped in detail. Such work required 1,876 man days labor and cost a total of \$12,015.61.

Field Studies

Study of Ribes regrowth and effectiveness of control made by Anderson - report prepared by Anderson and Fivaz.

Total Cost of All Blister Rust Control Work, 1918-1936, Inclusive

<u>Source of Funds</u>	<u>Amount Expended</u>	<u>% Total</u>	
State B.R. Appropriation	55,060.95	24.6	25.8% by State
Other State Appropriations.....	2,013.83	0.9	
Individuals.....	581.36	0.3	
B.P.I.	43,883.83	19.6	74.2% by Gov't.
B.E. and P.Q.	877.75	0.4	
E.C.W.	80,744.87	36.1	
P.W.A.	12,427.98	5.6	
W.P.A.	26,452.68	11.8	
A.R.A.	1,640.00	0.7	
Grand Total	\$223,683.25	100.0	

The total expenditures for all control work include cost of administration, supervision, blister rust control agent activities, Ribes eradication, field studies and mapping, nursery sanitation, black currant eradication, Ribes compensation, and miscellaneous.

Expenditures from federal emergency funds since 1933 amount to 54.2 percent of the total cost.

-120-
Ratio of Total Cost of All Control Activities to Total Commercial Value
of White Pine

Area of White Pine	Commercial Value of White Pine	Total Cost of all Control Activities	% Total Commercial Value Represented by Cost of All Control Activities
1936	\$2,002,053.*	\$223,683.25	11.2*

*In addition to the pine area, thousands of acres of potential pine land have been cleared of Ribes. The value of this potential pine acreage is not included in the commercial value listed above. Consequently, the percentage figure showing the relation of cost of control to commercial value of pine is rather misleading.

Comparison Between Cost Per Acre Based on Ribes Eradication Costs Only and
On Cost of All Control Projects, 1918-1936, Inclusive

	Cost Per Acre			
	Based on Ribes Eradication Costs Only		Based on Total Expenditures	
	1918-1936	Average Per Year	1918-1936	Average Per Year
	.225	.012	.420	.022

Plans for 1937-1938

Complete initial Ribes eradication on potential pine lands - 28,960 acres.
Complete the re-examination of control areas that now need such work - 63,548 acres.
Complete survey of forest types and an estimate of their commercial value - maintain
Rabbit-free conditions in environs of pine growing nurseries.

BLISTER RUST CONTROL IN CONNECTICUT

Most of the important white pine in Connecticut occurs in scattered woodlots in the northern half of the state, except in the southern portion of Hartford and Tolland counties. White pine has been planted extensively throughout the state especially in the southern half. During 1931 to 1936, 243,537 white pines were distributed from the state nursery for planting on state lands. Considerable planting was also done by individuals who obtained their stock from private nurseries. The scenic and recreational value of white pine probably equals or exceeds the commercial value.

Acreage and Commercial Value of White Pine (Based on 1926 cartographical survey)

	<u>Acreage</u>	<u>Value</u>
Pure white pine (80-100% pine) - (Over 6" DBH.....	32,697	\$3,662,064.
(Under 6" DBH.....	40,729	1,018,225.
Mixed white pine - (21-29% pine in mixture.....	57,794	1,618,232.
(30-79% pine in mixture.....	66,551	3,726,856.
Other types with scattered white pine stocking and restocking*.....	18,383	(128,681. Pine Stocking (21,929. Restocking
White pine restocking in pure merchantable and mixed white pine types.....	34,688**	64,429.
Totals.....	216,154	\$10,240,416.

*Excludes those "other types" which have 1-20% white pine (above restocking size), but do not contain white pine restocking.

**This acreage not included in total as it is already listed under pure and mixed white pine types.

Basis for estimating value of white pine: merchantable stumpage figured at normal value of \$7 per M - average contents per acre, pure merchantable white pine = 16 M bd. ft.; mixed white pine, 21-29% = 4 M bd. ft.; mixed white pine, 30-79% = 8 M bd. ft.; and white pine, above restocking size in other types = 1 M bd. ft. Pure stands of white pine under 6" DBH given normal value of \$25 per acre. Estimated normal per acre value of white pine restocking: degree of restocking, light = \$1, medium = \$2, heavy = \$3.

Stumpage prices under present conditions range from \$4 to \$8 per thousand board feet. This is, however, a temporary situation which should return to normal when economic conditions improve.

Ribes Conditions

Ribes are generally distributed and fairly abundant in Litchfield County and in 3 townships in Windham County. Over the remainder of the state, such bushes are usually few and localized. An average of 3.8 Ribes per acre have been pulled in conducting control work on 561,495 acres during the period of 1918-1936, inclusive.

Pine Infection Conditions

General in northern Litchfield County - only spot infections, mostly old cankers over remainder of state.

The cost of the regular Ribes eradication work includes owners' labor (valued at 40 cents per hour) and all expenditures for wages of laborers, scouts, and foremen employed in locating and pulling Ribes. It also comprises the cost of maintaining the state eradication crew camps, cost of crew transportation and miscellaneous expenses for trail paper, picks, etc. In the case of the E.C.W. personnel, the cost of their total time on Ribes eradication work was figured at the rate of \$1.35 per eight hour man day in 1933, \$1.40 in 1934, and \$1.50 during 1935 and 1936.

Control work was conducted from 7 C.C.C. camps during 1933, 8 camps in 1934, 10 in 1935, and 7 during 1936.

Results of First Re-eradication of Ribes, 1923-1936, Inclusive

Program	Total Acreage Re-Worked	Ribes Pulled		Total Man Days	Total Cost	Per Acre		
		Wild	Cult.			Cost	Ribes	Man Days
Regular	36,161	448,596	3,706	6,939	22,654.93	.627	12.4	.19
E.C.W.	124,966	1,600,083	2,737	35,153	59,926.23	.480	12.8	.28
P.A.A.	13,170	309,810	-	2,692	12,115.01	.920	23.5	.20
General WPA	31,014	410,579	906	8,975	34,805.43	1.12	13.2	.29
Totals	205,311	2,769,068	7,349	53,759	129,501.60	.631	13.6	.26

No satisfactory comparison can be made between the per acre values listed in the two preceding tables, since only 57.6 percent of the area initially protected has been reworked, and such activities have been confined to the Ribes sites. Also a large part of the re-eradication work has been performed by emergency crews in strip formation.

Status of Regular Ribes Eradication Work - December, 1936

Program	Acreage of Control Area	Acreage of Control Area Worked	Percentage of Control Area Worked	Acreage Still in need of Protection
Initial	440,823	356,134	80.8	84,639
Re-Erad.	234,650	205,311	87.5	29,339

The "control area" for the initial work comprises the acreage initially cleared of Ribes to date plus the acreage still in need of initial protection - the latter figure being an estimate supplied by the state leader at the close of 1936.

The "control area" for the re-eradication program is based on the total area re-worked for Ribes during the period 1918-1936, inclusive, plus the estimated acreage now in need of re-eradication.

Nursery Sanitation

During the fall of 1927, 158 owners of nurseries were interviewed regarding blister rust control. Sixteen owners, desiring to ship pine out of New England, agreed to cooperate in maintaining official control areas around their nurseries. A preliminary Ribes survey of these areas resulted in sanitation zones being established around 11 of the nurseries in 1928. These nurseries were reworked in 1929. During the fall of 1929, the state leader made a survey of nurseries having or considering sanitation zones to determine the owners' attitude towards state maintenance of these zones with the nursery-owners contributing a substantial part of the costs. All agreed to cooperate in amounts ranging from \$25 to \$100 annually. Since 1930 blister rust control has been maintained around the state nursery and 3-12 private nurseries. At the present time, ten private

Policy

In Litchfield County, where pine and Ribes are more or less generally distributed, cooperation under the regular program has been conducted with individuals and towns, foremen and scouts being furnished by the state. Since 1933, the regular cooperative work was necessarily curtailed due to the control activities performed under the E.C.W., P.W.A., W.P.A., C.W.A., E.R.A. and A.R.A. Programs. All control work carried on under these emergency programs was supervised by the state blister rust control leader with the assistance of temporary district leaders, technical foremen and supervisors.

Informational and Service Activities of Permanent and Temporary Agents
1928-1936

Informational

Meetings addressed	47	Publications distributed*.....	12,155
Attendance.....	1,940	Mimeo.articles dist.(1928-1934)*	91
Field demonstration meetings**	31	Items published.....	641
Attendance**	693	Posters and signs placed*.....	569
Displays placed.....	117	Roadside dem.placed (1930-1934)***.....	24

Service

Initial interviews.....	4,076	Persons instructed in field.....	1,533
Follow-up calls.....	3,033		

*No record kept of these items after April 30, 1934.

**Included with "Meetings addressed" after April 30, 1934.

*** " " " "Displays placed" " " " " " "

Town and Individual Cooperation in Blister Rust Control Work

During the period 1918-1936, inclusive, a total of \$14,957.89 has been expended from 25 town appropriations and 4 contributions for control work. Of this total \$901.00 was expended for special black currant elimination work since 1934. The town funds include subscriptions by individuals in a few instances. In addition, 488 individual cooperators have spent \$8,729.69 for control work on their properties. The expenditures by individuals comprise \$76.25 paid by individual cooperators (nurserymen) during 1930 to 12 owners of cultivated Ribes for the destruction of 114 bushes, and \$761.36 spent by individuals on special nursery sanitation work during the period 1930-1936, inclusive.

Results of Ribes Eradication Work, 1918-1936, Inclusive
(Initial and Re-eradication)

Program	Total Acreage Worked	Ribes Pulled		Total Man Days	Cost				(Per Acre)	
		Wild	Cult.		Local Coop.	State	Gov't.	Total	Cost	Per Acre
Regular	265,711	2,059,714	22,282	23,693	19,733.97	46,940.17	9,591.44	76,265.58	287	7.8
E.C.W.	216,052	2,028,522	7,262	46,127	-	-	79,057.75	79,057.75	363	9.4
P.W.A.	13,170	309,810	-	2,692	-	843.90	11,271.11	12,115.01	920	23.5
State WPA	1,989	1,396	97	465	346.00	32.35	1,838.98	2,217.33	1.11	0.7
Federal WPA	47,241	493,485	3,044	11,262	176.00	65.53	43,531.37	43,772.90	927	10.0
E.R.A.	16,118	48,193	1,556	3,110	1,143.00	8.35	12,936.40	14,087.75	874	5.0
A.R.A.	1,214	6,337	2	111	-	-	424.31	424.31	350	6.0
Total	561,495	4,952,457	34,243	87,460	21,398.97	47,390.80	162,661.36	237,941.13	1,403	2.8

This summary excludes the special nursery sanitation work performed during the period 1930-1936, inclusive, when a separate record was kept of this project.

nurseries are maintaining sanitation zones.

Results of Ribes Eradication in Connection with Nursery Sanitation Project, 1930-1936
(Not included in preceding Ribes eradication summaries)

Type of Work	Acreage Worked	Ribes Pulled		Total Man Days	Total Cost	Per Acre		
		Wild	Cult.			Cost	Ribes	Man Days
Initial eradication	7,157	5,839	152	278	882.21	.123	0.8	.04
Maintenance	43,156	9,499	878	1,898	6,622.18	.140	0.2	.04
Total	50,313	15,338	1,030	2,176	6,904.39	.137	0.3	.04

Prior to 1930, the data for the nursery sanitation were not kept separate and were included in regular Ribes eradication summaries. A summary supplied by the state leader (based on incomplete data) shows that from 1927-1929, inclusive, an additional 10,922 acres were cleared of 1,242 wild Ribes and 3,267 cultivated bushes at a total cost of \$1,707.36. Of this work prior to 1930, 5,580 acres were re-eradication, a total of 1,083 wild Ribes and 1,431 cultivated bushes being removed at a cost of \$694.90.

Status of Nursery Sanitation Work - December, 1936

Nurseries Where Protection Established and Being Maintained			No. Nurseries Protected During 1936	No. White Pines Existing During 1936 in Nurseries Protected That Year
Number	Maximum Acreage of Control Areas			
State	Private			
1	10	3,766	11	1,210,845

Three additional nurseries established sanitation zones, but abandoned them.

Ribes Nigrum Elimination

In 1929, the Connecticut Legislature passed a bill prohibiting the planting, selling or possession of Ribes nigrum in the state. A systematic campaign to eradicate black currants was inaugurated during 1930 in connection with a census of cultivated Ribes. Such work has been continued each succeeding year and as a result the project has been completed in the state. The following table summarizes the results of this black currant elimination work.

Results of Ribes Nigrum Elimination Work, 1930-1936, Inclusive

No. Properties Inspected.....	318,344
No. Patches Located.....	32,695
No. Ribes Pulled (Nigrum.....	7,464
(Other Cult.	42,397
Total Man Days.....	14,610
(Towns.....	901.00
(State.....	3,110.99
(B.P.I.	3,647.42
Cost (P.W.A.	1,915.05
(E.C.W.	218.40
(C.W.A.	5,938.10
(E.R.A.	59,568.50
Total	75,299.46

Cultivated Ribes Compensation, 1928-1936

Total number of cultivated bushes destroyed.....	85,134
Total number of bushes paid for.....	175
Number of persons paid compensation.....	16
Amount paid in reimbursement.....	103.50

No compensation was paid prior to 1929. These compensation figures include \$76.25 paid by individual cooperators (nurserymen) during 1930 to 12 owners of cultivated Ribes for the destruction of 114 bushes.

Surveys

During 1920 and 1921, all pine areas in the commercial pine range were mapped on U.S.G.S. sheets, and an estimate made of their contents - data used as a basis for control work and for informational purposes. These 1920 and 1921 pine maps have been of little value on control work during recent years due to the many changes, which have occurred since the original maps were made. Epidemiology survey made during 1926 of white pine and other types, Ribes and infection conditions - data summarized at Regional Office. During the winter of 1931-1932, a pre-eradication survey was made in the town of Cornwall. A detailed report of this survey is given in Vol. 16, No. 11 of the Blister Rust News. During 1933-1936, pine and control area mapping was conducted under the Regular, E.C.W., W.P.A., P.W.A. and E.R.A. programs during the late fall, winter and early spring months. The results of this mapping work are summarized in the following table:

Pine and Control Area Mapping

Program	Period	Acreage Mapped	Acreage Examined But Not Mapped	Miles Boundary Lines Painted	Man Days	Total Cost
Regular	1934	120	1,600	-	7	35.00
E.C.W.	1933-36	47,512	93,507	-	339	827.60
P.W.A.	1933-34	41,330	130,925	-	144	568.10
Federal W.P.A.	1935-36	16,343	103,629	119	833	5,499.62
State W.P.A.	1936	36,706	-	-	580	2,923.95
E.R.A.	1934-35	213,971	2,139,370	-	4,205	22,211.70
Total	-	355,982	2,469,031	119	6,108	32,065.87

Pine and control area mapping has been completed in 124 townships and partially finished in 29 others. It is estimated that 2,661 man days will be required to complete the mapping project.

A special pine infection survey was conducted during 1936 under the state W.P.A. program to obtain information on blister rust infection conditions in southern Connecticut where very little control work had been performed in previous years. Such data were needed in order to develop a blister rust control policy and intelligently plan future work. The results of this pine infection survey during 1936 were as follows:

No. towns worked.....	52
No. acres of white pine examined.....	10,337
No. infected white pines located.....	2,257
No. blister rust cankers found.....	4,457
% of cankers originating during period	
1915-1925, Incl.	21.9
% of cankers originating during period	
1926-1928, Incl.	55.3

It is quite probable that the inexperienced W.P.A. workers overlooked many cankers.

Field Studies Other Than Surveys

Ribes regrowth and effectiveness of control study made by Endersbee, report prepared under experiment by Riley, preliminary report submitted--studies made by Clark and Riley during 1929 to determine effectiveness of control and need for re-protection--data summarized in 1930 and 1931 strip line studies were made in Canaan, North Canaan, and Salisbury to determine the amount of blister rust infection in these towns. The data were used to show the need for eradication work. Two permanent pine infection data plots were established in the town of Salisbury and a similar study plot was made in Cornwall during 1932. A special report of Plot #1 in Salisbury was prepared by Riley, and the details of Plot #2 are given in his 1931 annual report. The data for the Cornwall plot is given in Riley's 1932 annual report. A chemical eradication of Ribes study was started in 1932 under the direction of Ferguson. Tentative results indicate that the cost of such work is excessive compared to the hand pulling method. The state leader also cooperated in the study to determine the quantity of the Viking currant to blister rust infection.

Total Cost of All Blister Rust Control Work, 1918-1936, Inclusive

<u>Source of Funds</u>	<u>Amount Spent</u>	<u>Percentage of Total</u>	
State B.R. Appropriation.....	124,329.00	21.2	25.4% by State
Other State Appropriations.....	1,127.82	0.2	
Individuals.....	8,729.69	1.5	
Towns.....	14,957.89	2.5	
W.P.I.	103,065.16	17.5	74.6% by Gov't.
B.E. and P.Q.	6,422.06	1.1	
B.C.W.	109,320.79	18.6	
F.W.A.	22,479.39	3.8	
W.P.A. (State Program).....	40,890.72	7.0	
W.P.A. (Federal Program).....	55,463.19	9.4	
G.W.A.	5,933.10	1.0	
B.R.A.	94,478.40	16.1	
A.R.A.	424.81	0.1	
Total	\$587,627.02	100.0	

Expenditures from federal emergency funds since 1933 amount to 56.0 percent of the total cost.

The total expenditures for all control work include cost of administration, supervision, blister rust control agent activities, Ribes eradication, nursery sanitation, black currant eradication, field surveys and studies, pine and control area mapping, Ribes compensation, and miscellaneous.

Relation of Total Cost of All Control Activities to Total Commercial Value of White Pine

<u>Percentage of White Pine</u>	<u>Commercial Value of White Pine</u>	<u>Total Cost of All Control Activities, 1918-1936, Inclusive</u>	<u>Percentage Total Commercial Value of White Pine Represented by cost of All Control Work.</u>
12.15	\$20,240,416	\$587,627.02	5.7

Comparison Between Cost Per Acre Based on Ribes Eradication Costs Only and
on Costs of All Control Projects, 1918-1936, Inclusive

Ribes Per Acre	Cost Per Acre			
	Based on Ribes Eradication Costs Only		Based on Total Expenditures	
	1918-1936	Ave. Per Year	1918-1936	Ave. Per Year
8.8	.406	.021	1.047	.055

Future Work

Complete initial control work - 84,639 acres, mostly scattered plantations in southern portion of state. Re-examination of control areas that now need to be re-worked - 29,339 acres. - maintain protection of all nurseries growing white pine - complete inspection of all white pine plantations in state - additional studies to determine effectiveness of control work - complete pine and control area mapping project.

BLISTER RUST CONTROL IN NEW YORK

The commercial range of white pine in New York covers approximately all of the state except the northwestern quadrant, and even in this section many pines have been planted for reforestation purposes. Outside the Adirondack and Catskill Forest Preserves it occurs chiefly as farm woodlots or plantations. It is most abundant in the northeastern part of the state in the counties of Warren, Essex, Clinton, Saratoga and Washington. A large part of the forest area in that part of New York is owned by the state and no cutting is allowed on the Forest Preserves since these areas are maintained chiefly for scenic, recreational and watershed protection purposes. Consequently, the value of the pine for such objectives probably equals or exceeds its commercial value. The public interest in the planting of white pine for reforestation is evidenced by the distribution of 45,794,864 trees of this species from the state nurseries during the period 1932 to 1936, inclusive.

Acreage and Commercial Value of White Pine

(Based on 1926 cartographical survey)

	<u>Acreage</u>	<u>Value</u>
Pure white pine (80-100%)--(Over 6" DBH.....	214,600	\$24,035,200
(Under 6" DBH....	457,171	11,429,275
Mixed white pine--(21-29% pine in mixture...	231,699	6,487,572
(30-79% pine in mixture...	242,218	13,564,203
Other types with scattered white pine		
stocking and restocking*.....	170,269	{ 1,191,883 -Pine stocking
		{ 221,237 -Restocking
White pine restocking in pure merchantable		
and mixed white pine types.....	115,835**	197,847
Total.....	1,315,957	\$57,127,222

*Excludes those "other types" which have 1-20% white pine (above restocking size), but do not contain white pine restocking.

**This acreage not included in total as it is already listed under pure and mixed white pine types.

Basis for estimating value of white pine: merchantable stumpage figured at normal value of \$7 per M - average contents per acre, pure merchantable white pine = 16 M bd. ft.; mixed white pine, 21-29% = 4 M bd. ft.; mixed white pine, 30-79% = 8 M bd. ft.; and white pine above restocking size in other types = 1 M bd. ft. Pure stands of white pine under 6" DBH given normal value of \$25 per acre. Estimated normal per acre value of white pine restocking: degree of restocking, light = \$1, medium = \$2, heavy = \$3.

Stumpage prices under present conditions range from \$4 to \$8 per thousand board feet. This is, however, a temporary situation which should return to normal when economic conditions improve.

Ribes Conditions

Wild Ribes are generally distributed throughout the state, being most abundant in the northeastern part of the state, particularly in Essex and Warren Counties. In this section there occurs heavy concentrations of large size Ribes rotundifolium. The Ribes in the western half of New York are more localized, consequently some of the control work can be done by scouting methods. An average of 23.9 bushes per acre were destroyed on the 2,138,478 acres cleared of Ribes during the period 1918-1936, inclusive.

Pine Infection Conditions

Blister rust infection on white pines is general throughout the state, being especially heavy in the northeastern portion particularly in Essex and Warren Counties. In this northeastern region, on a basis of township units, the percent of diseased pine ranges from 1-30 percent of the total amount of pine. Also, see strip line data under "Surveys".

Studies were made in unprotected areas during 1934 in 10 plots comprising 5.95 acres in 7 towns. Blister rust had infected 1,764 white pines, or 39.7% of the 4,445 trees of this species. Most of the 2,793 cankers were of recent origin. In fact, over 48% of them originated during the period 1928-1932, which shows the danger of delaying protection work.

Policy

Under the regular control program, protection has been applied to pine areas on public and private lands. The state has cooperated with individual owners by furnishing, at state expense, foremen to supervise the control work. For the past several years, control work on the state forest preserves has been restricted chiefly to pine areas of scenic importance; isolated pine areas of medium or old growth not being protected. During 1933-1936, the regular cooperative work was necessarily curtailed due to the activities conducted under the E.C.W., P.W.A., E.R.A., A.R.A., and W.P.A. Programs. All control work carried on under these emergency programs was directed by the district blister rust control leaders with the assistance of technical foremen, checkers and supervisors. Control projects were conducted from 8 C.C.C. camps in 1933, 29 in 1934, 23 in 1935, and 38 during 1936.

Informational and Service Activities of Permanent and Temporary Agents, 1923-1936

Informational

Meetings addressed.....	1,152	Publications distributed*.....	133,570
Attendance.....	93,411	Mimeo.articles dist.(1928-1934)*.	3,595
Field demonstration meetings**..	269	Items published.....	2,257
Attendance.....	4,682	Posters and signs placed*.....	9,049
Displays placed.....	515	Roadside dem.placed(1930-1934)***	8

Service

Initial interviews.....	24,541	Persons instructed in field....	16,812
Follow-up calls.....	18,641		

*No record kept of these items after April 30, 1934.

**Included with "Meetings addressed" after April 30, 1934.

*** " " "Displays placed" " " " " "

County and Individual Cooperation in Blister Rust Control Work
1918-1936, Inclusive

During the period 1929-1936, inclusive, a total of \$7,900.24 was expended from 31 county allotments made for blister rust control work. From 1918-1936, inclusive, 5,851 individual cooperators spent \$169,319.85 for Ribes eradication work on their properties. The expenditures by individuals include \$212.67 expended on nursery sanitation work from 1930-1936, inclusive.

Results of Ribes Eradication Work, 1918-1936, Inclusive
(Initial and Reeradication)

Acreage Worked	Ribes Pulled		Cost				Per Acre	
	Wild	Cult.	State	Indiv. & Counties	Govt.	Total	Cost	Ribes
1,113,564	20,792,622	61,662	\$491,046.73	\$176,965.82	\$116,914.03	\$ 784,926.61	.705	18
546,465	16,130,214	27,031	24,263.89	-	382,841.25	407,105.14	.745	29
46,833	783,737	5,549	8,885.55	-	21,002.99	29,888.54	.638	16
422,110	13,223,113	17,078	38,134.50	-	446,354.29	484,488.79	1.15	31
6,677	138,709	44	2,713.53	-	2,779.70	5,493.23	.823	20
2,829	38,939	30	-	-	7,270.58	7,270.58	2.57	13
2,133,478	51,107,334	111,394	\$565,044.20	\$176,965.82	\$977,162.87	\$1,719,172.89	.804	28

*Of this amount \$7,900.24 was county money.

Special nursery sanitation work for the period 1930-1936, inclusive, is not included in this summary.

The cost of the Ribes eradication projects includes owner labor (valued at 30 cents per hour) and expenditures by all agencies for wages of laborers, linemen, scouts, and foremen employed in locating and pulling Ribes. It also comprises the cost of maintaining the state control camps - cost of crew transportation and miscellaneous expenses for trail paper, picks, etc. In the case of the E.C.W. personnel, the cost of their total time on Ribes eradication work was figured at the rate of \$1.35 per eight-hour day in 1933, \$1.40 in 1934, and \$1.50 during 1935 and 1936.

Results of First Reeradication of Ribes, 1923-1936, Inclusive

Program	Acreage Reworked	Ribes Pulled		Total Cost	Per Acre	
		Wild	Cult.		Cost	Ribes
Regular	159,089	901,834	3,093	\$ 48,786.12	.307	5.7
E.C.W.	131,838	2,791,855	1,009	103,523.30	.785	21.2
F.T.A.	26,465	289,984	3,808	17,604.17	.665	11.0
V.P.A.	70,216	1,868,023	2,403	70,764.45	1.01	26.6
E.R.A.	2,258	13,336	-	1,299.64	.576	5.9
Total	389,866	5,865,032	10,313	\$241,977.68	.621	15.0

No direct comparison is practicable between the per acre values of the reeradication work and the corresponding values of the initial eradication projects which have averaged 80.4 cents to date, since only 22.3 percent of the area initially protected has been reworked and such reexaminations were usually restricted to the Ribes sites. The figures do however indicate a decreased cost for the reeradication work.

Status of Regular Ribes Eradication Work - December, 1936

Program	Acreage of Control Area	Acreage of Control Area Worked	Percentage of Control Area Worked	Acreage in Need of Protection
Initial	2,752,919	1,748,612	63.5	1,004,307
Reerad.	779,590	389,836	50.0	389,724

The "control area" for the initial work includes the acreage initially cleared of Ribes plus the acreage still in need of initial protection. The latter figure was based on township estimates made by the blister rust control leaders at the end of 1936.

An additional 199,383 acres of initial control work was also reported for New York to protect 19,772 acres of scattered white pine areas, but these data are not included in the above summary as the practicability of such control work is questionable.

The "control area" for the reeradication projects includes the total area reworked for Ribes plus the estimated acreage now in need of reeradication work.

Results of Nursery Sanitation Work in New York during Period
1930-1936, Inclusive

Type of Work	Acreage Worked	Ribes Pulled		Total Man Days	Total Cost	Per Acre		
		Wild	Cult.			Cost	Ribes	Man Days
Initial eradication	3,110	26,017	634	382	\$ 1,225.55	.394	8.4	.12
Reeradication	61,853	120,275	1,208	5,052	17,513.01	.280	1.9	.08
Total	64,963	146,292	1,842	5,434	\$18,538.56	.285	2.5	.08

Since 1930, a separate record has been kept of the nursery sanitation work and the data have not been included in the regular Ribes eradication summaries.

During the past several years, sanitation measures have been applied to protect the pine areas in the state nurseries. The protection zones were for some time maintained at 900 feet. In 1928, this distance was increased to 1500 feet for all Ribes, except nigrum, which were eradicated within one mile of the pine areas. To date, Ribes nigrum have been eradicated from within one mile of each of the seven state nurseries (including the Syracuse nursery) and the 900-foot Ribes free zones have been extended to 1500 feet. Two of the state nurseries were leased to the Soil Conservation Service during 1936.

In addition to the state and federal nurseries, there were 262 commercial nurseries growing white pine in New York in 1932. These private pine-growing nurseries contained 364,544 white pines at that time. Of this total number of trees, 207,700 were located in three nurseries. Only 58 of the private nurseries were growing 500 or more white pine, and only 10 had 5,000 or more of such trees. During 1928, the first attempt was made to establish protection zones surrounding some of these nurseries, particularly in Wayne and Westchester Counties. It soon became

apparent that cultivated Ribes were extremely abundant in the vicinity of the various nurseries. As compensation had to be paid for such bushes destroyed, it was evident the work would have to be limited. Therefore, it was restricted to a general survey to determine and record Ribes conditions in the environs of the nurseries in these counties and to the eradication of Ribes nigrum in such situations. According to the revised state blister rust law, effective February 17, 1930, no compensation shall be paid by the state for any species of Ribes destroyed in connection with the establishment of Ribes free zones around commercial nurseries, but fair compensation for such bushes must be paid by the person owning or operating the protected nursery.

During 1930, a Federal pine shipping permit was issued to the Jackson & Perkins Nursery of Newark, New York. This company may therefore ship white pines interstate according to the regulations of Quarantine 63. This is the only private nursery in New York that has desired to establish sanitation zones.

An attempt was made to compile a summary of the nursery sanitation work prior to 1930 but in some instances it was not possible to separate the data. An incomplete summary based on available records shows that during the period 1925-1929, a total of 17,782 acres were cleared of 138,842 wild Ribes and 294 cultivated bushes at a total cost of \$6,735.22. Of this work, 9,020 acres were reeradication; 97,047 wild and 294 cultivated Ribes being destroyed at a cost of \$4,795.28.

Status of Nursery Sanitation Work - December, 1936

Nurseries Where Protection Established and Being Maintained				No. Nurseries Protected During 1936	No. White Pines Existing during 1936 in Nurseries Protected That Year
Number			Maximum Acreage of Control Areas		
State	Federal	Private			
5	2	1	11,207	4	40,050,000

Ribes Nigrum Elimination

The New York State law prohibits the possession of Ribes nigrum. A systematic campaign to eradicate such bushes was inaugurated in 1928. During the period 1928-1936, inclusive, such work was completed in 225, and partially completed in 50 additional towns, out of a total of 1,012 towns and cities in the state. As a result, 36,930 black currants and 761 other cultivated Ribes were destroyed at a total cost of \$27,308.87. This special Ribes nigrum work required 5,142 men days labor.

White Pine Blister Rust Canker Elimination

In New York, the scenic pines on the state reservation at Saratoga were examined during 1935 for infections by state employees. The area contains 75 acres of plantations about 20 years old. There is also considerable natural white pine scattered over some 700 acres of woodlands. The pines had previously been pruned to a height of 6 feet which aided materially in inspecting them for infection.

The inspections disclosed a total of 113 diseased trees, 49 of which had died from blister rust. These dead trees were cut and limb infections were also removed from 64 other pines. No time or cost figures are available for this work.

Elimination of blister rust cankers was also conducted in a 40-acre state plantation in the town of Hensonville in Greene County, New York. This work was done under the N.R.A. program by a 12-man crew during the period from September to November, 1933. The pines were pruned of lower branches to an average height of four feet, thereby eliminating a majority of the infections. All other visible branch cankers were removed, and the trees with stem infections were cut down. No record was kept of the number of trees treated. A total of \$2,701.16 P.W.A. funds and \$12.00 state money was expended on this project.

Additional canker removal work was performed at Spruceton in Greene County and on the Wilcox plantation in Warren County. No figures are available concerning the results accomplished on these two areas.

During 1935 and 1936, W.P.A. crews were used on canker elimination work in publicly-owned white pine plantations in New York. The results of these projects are summarized in the following table.

White Pine Blister Rust Canker Elimination Work under W.P.A. Program
1935-1936

Year	Est. No. Pines Examined	No. Fatally Infected Pines Cut Down	No. Pines Treated for Infection	No. Branch Cankers Removed	Total Man Days	Total Cost (All W.P.A.)
1935	197,323	30,087	24,685	30,912	2,264	\$ 9,005.94
1936	151,885	39,983	25,600	31,054	2,179	8,544.20
Total	349,208	70,070	50,285	61,966	4,443	\$17,550.14

Cultivated Ribes Compensation - 1918-1936

Total number of cultivated bushes destroyed.....	150,927
Number of bushes paid for.....	16,100
Number of persons paid compensation.....	1,143
Amount paid in reimbursement.....	\$5,525.04

Surveys

Strip line infection survey made by Brooks in 1920 - the pines on rod wide strips, totaling 28.4 miles in length, were examined; a total of 12,297 pines were inspected, and 5.1 percent found diseased; 16 plots, totaling 15.1 acres, were laid out adjacent to the strips - 17.5 percent of the 14,455 pines in these plots were infected. In 1922, Fizez made a similar study near Warrensburg on a strip 12.1

and found 51 percent of the 3,132 pines infected. During 1920 and 1921, Addison made a survey of white pine in parts of Essex and Warren Counties - the pine areas were designated on U.S.G.S. maps, but no summary has been made of acreage or contents of the stands - maps used as basis for control work. A cartographical survey was made by the district leaders and Corliss, during 1926 and 1927, of white pine and other forest types, Ribes, and infection conditions - maps and summaries prepared at Regional Office. During the period 1927 to 1931, McIntyre had maps made showing roughly the pine and hardwood types in the main pine growing counties of the state. These maps have been helpful to the district leaders in locating the areas to be protected. During 1932, a successful effort was made in two districts to refine the mapping system so as to obtain more detailed information. Since 1932, this new mapping system has been effectively applied in all the control districts. The results of such work, conducted under the Regular, P.W.A., W.P.A. and E.R.A. Programs during the late fall, winter and early spring months since 1932, are summarized in the following table.

Pine and Control Area Mapping - 1933 to 1936, Inclusive

Program	Period	Total Acreage Mapped	Acreage Examined But Not Mapped	Miles Boundary Lines Painted	Total Man Days	Total Cost
Regular	1934-36	180,738	76,070	-	990	\$ 4,752.00
P.W.A.	1933-35	200,623	244,408	-	2,384	14,559.60
E.C.W.	1935-36	7,163	27,467	-	410	678.00
W.P.A.	1935-36	828,135	365,110	2,379	9,167	48,859.40
Total	-	1,216,659	713,055	2,379	12,951	\$68,849.00

Up to the end of 1936, such mapping work had been completed in 140 New York townships and partially completed in 61 additional townships. No mapping has been performed in 676 townships. Due to the scattered distribution of the white pine, the feasibility of control work is questionable in 258 of the latter townships. It is estimated that 14,947 man days work will be required to complete the mapping in townships where control work is practicable and an additional 4,803 man days for the work in the questionable townships.

Field Studies Other Than Surveys

Selective Ribes eradication experiment at North Hudson - not completed - no report. Effectiveness of control study made by Fivaz - preliminary report only. Blister rust damage studies by York and Snell - published in Journal of Forestry. Ribes ecology studies by Littlefield and Fivaz - results of Fivaz's study published in 1931. Damage study of pine plantation at Schroon River - preliminary report prepared by Ford. During 1928, the pines were examined for infection in 30 plots (each approximately one acre in size) 15 of the plots being laid out in areas cleared of Ribes prior to 1925, and the other 15 in tracts not eradicated of such bushes in the same towns. The study showed that since the time of eradication, over fifteen times as much infection has originated in the unprotected tracts, as in the protected areas. During 1929, nine additional pairs of comparable plots were examined by the agents and the data summarized at the Regional Office. Three of the New York leaders cooperated in the study to determine the immunity of the Viking current to blister rust infection.

Effectiveness of Blister Rust Control

During 1934, plot and strip line studies were made to determine the amount of blister rust infection on white pines in protected and unprotected areas in New York. The disease had existed in these tracts since 1915. Ribes eradication in the control areas had been performed during the period of 1924-1929, inclusive. In protected areas, 11 plots, comprising 52.4 acres, were laid out in 3 townships and the white pines were examined carefully for infection. Out of a total of 5,915 pines, 1,882, or 31.8%, were infected with 2,652 cankers. However, only 103 of these cankers, or 3.9%, originated since the application of control measures, even though the protection work had been conducted 5 to 10 years previous. Infection conditions in protected areas were also determined in 5 towns by examining all pines under 20 feet in height on 2.55 miles of rod-wide strip lines. A total of 28.4% of the 4,952 pines on the strips were infected with 1,776 cankers, but only 1.46% of these infections originated since the control work was performed.

In unprotected areas, studies were made during 1934 in 10 plots comprising 5.95 acres in 7 townships. Blister rust had infected 1,764 white pines, or 39.7% of the 4,445 trees of this species. Most of the 2,793 cankers were of recent origin. In fact, over 48% of them originated during the period 1928-1932, which shows the danger of delaying protection work.

Total Cost of All Blister Rust Control Work, 1918-1936, Inclusive

<u>Source of Funds</u>	<u>Amount Spent</u>	<u>Percentage of Total</u>
State Blister Rust Appropriation.....	\$1,020,670.40	35.2)
Other State Appropriations.....	29,194.15	1.0)
Individusls.....	169,319.85	5.8)
Counties.....	7,900.24	0.3)
B.P.I.....	479,769.34	16.5)
B.E.& P.Q.....	4,885.88	0.2)
E.C.W.....	507,334.11	17.5)
P.W.A.....	92,334.23	3.2)
W.P.A.....	578,086.54	19.9)
E.R.A.....	2,779.70	0.1)
A.R.A.....	7,270.58	0.3)
Total.....	\$2,899,545.02	100.0

Expenditures from federal emergency funds since 1933 amount to 41.0 percent of the total cost.

The total expenditures for all control work include cost of administration, supervision, blister rust control agent activities, Ribes eradication, eradication assistants, nursery sanitation, black currant eradication, field surveys and studies, pine and control area mapping, Ribes compensation and miscellaneous.

Relation of Total Cost of All Control Activities to Total Commercial Value of White Pine

Acreage of White Pine	Commercial Value of White Pine	Total Cost of All Control Activities, 1918-1936, Inclusive	Percentage Total Commercial Value of White Pine Represented by Cost of All Control Activities
1,315,957	\$57,127,222	\$2,899,545.02	5.1

Comparison Between Cost Per Acre Based on Ribes Eradication Costs Only and on Cost of All Control Projects, 1918-1936, Inclusive

Ribes Per Acre	Cost Per Acre			
	Based on Ribes Eradication Costs Only		Based on Total Expenditures	
	1918-1936	Ave. Per Year	1918-1936	Ave. Per Year
25.9	.804	.042	1.355	.071

Future Work

Complete initial eradication work on state and individually owned lands, 1,004,507 acres - pine plus protection zones-(based on township estimates made by district leaders at close of 1936). Reexamination of 389,724 acres that leaders estimate now need to be reworked. Elimination of Ribes nigrum throughout the state - application of adequate sanitation measures in environs of all important pine growing nurseries - application of control measures in areas to be planted to white pine. Complete pine and control area mapping in 418 townships where no work of this type has been performed and in 61 townships which have been partially mapped.

BLISTER RUST CONTROL IN NEW JERSEY

From a forestry view point, there is very little white pine in the state; however, it has been planted extensively as an ornamental, especially in the Red Bank and Morristown sections. Native white pine is found chiefly in the northern part of the state especially in the townships of Montague, Sandyston, and Wallpack in Sussex County, and New Milford in Passaic County. It occurs principally in scattered small lots along the river valleys. This northern region is largely a summer resort section, consequently the white pine has a high scenic value which exceeds its commercial worth.

Acreage and Commercial Value of White Pine
(Based on 1926 cartographical survey)

During the period 1932 to 1936 inclusive the planting of white pine from the state nursery, exclusive of E.C.W. planting, was as follows: under Clark McNary Law to farmers, 199,000; outside Clark McNary Law but not on state land, 168,800; on state lands, 272,800 - Total 640,600.

	<u>Acreage</u>	<u>Value</u>
Pure white pine (80-100% pine) --(Over 6" DBH.....	600	67,200.00
(Under 6" DBH.....	1500	37,500.00
Mixed white pine - (21-29% pine in mixture.....	1500	42,000.00
(30-79% " " " ".....	2000	112,000.00
Other types with scattered white pine stocking and restocking*.....	2000	(14,000.00-Pine stocking (1,825.00-Restocking
White pine restocking in pure merchantable and mixed white pine types.....	1175**	1,175.00
Totals.....	7600	275,700.00

*Excludes those "other types" which have 1-20% pine (above restocking size) but do not contain white pine restocking.

**This acreage not included in total as it is already listed under pure and mixed white pine types.

Basis for estimating value of white pine: merchantable stumpage figured at normal value of \$7 per M - average contents per acre, pure merchantable white pine = 16 M bd. ft.; mixed white pine, 21-29% = 4 M bd. ft.; mixed white pine, 30-79% = 8 M bd. ft. and white pine, above restocking size in other types = 1 M bd. ft. Pure stands of white pine under 6" DBH given normal value of \$25 per acre. Estimated normal per acre value of white pine restocking: degree of restocking, light = \$1.

Ribes Conditions

Wild Ribes are comparatively few but more or less generally distributed in the northern part of the state. Ribes rotundifolium, vulgare, cynosbati and americanum have been found. In many areas the Ribes are so few and localized that they can be effectively eradicated by scouts at a low per acre cost. An average of 2.9 bushes per acre have been destroyed on the 16,742 acres examined for Ribes.

Pine and Ribes Infection Conditions

First found in New Jersey in 1911 on pines at the Newark watershed near Charlottsburg. Since then, infection has been found somewhere in the state every year with exceptions of 1912, 1914, 1915, 1923, and 1929. Scouting in 1927 showed the disease more generally prevalent than ever before, being found on Ribes in 21 localities in seven counties. No pine infection was reported from 1918 to 1934 when scouting by Federal agents resulted in the location of infection on native pines in Montague, Vernon and West Milford. In the latter township heavy infection was found to extend throughout an area comprising 15 acres of white pine, ranging from 5-30 years old. At least 30 percent of the trees on the tract were diseased with cankers originating during the period 1925 to 1932.

Policy

Prior to 1929, all blister rust activities in this state were conducted by one or two temporary employees used during the summer months on scout work to determine pine, Ribes and infection conditions. Since August, 1929, a permanent leader has been employed on a part time basis. Due to the limited amount of native white pine, his activities have been confined chiefly to nursery sanitation, black currant eradication, inspection and protection of plantations, scouting, and direction of control work where needed. Regular Ribes eradication work was conducted for the first time in the state during 1934 in the townships of Montague, Sandyston, and Walpack, and P.W.A. scout and a crew of five laborers from a CCC Camp being used on project. Control work was also conducted by one P.W.A. crew during May and June, 1935; and by one or two W.P.A. crews during July - September, 1935 and during the entire 1936 season.

Informational and Service Activities

No complete records are available of such activities performed by the part time leader.

Results of Ribes Eradication Work, 1934-1936, Inclusive. (All initial control work)

Program	Total Acreage Worked	Ribes Pulled		Total Man Days	Total Cost			Per Acre		
		Wild	Cult.		State	Govt.	Total	Cost	Ribes	Man Days
P.W.A.	381	19,795	304	247	-	346.50	346.50	.909	52.0	.65
W.P.A.	12,736	6,858	1110	126	45.23	732.20	777.43	.061	0.5	.01
P.W.A.	3,625	21,127	299	951	298.10	3862.30	4160.40	1.15	5.8	.26
W.P.A.	16,742	47,780	1713	1324	343.33	4941.00	5284.33	.316	2.9	.08

The cost of the Ribes eradication work includes all expenditures for laborers and scouts employed in locating and pulling Ribes - cost of crew transportation and miscellaneous expenses for trail paper, picks, etc. In the case of the E.C.W. personnel, the cost of their total time on Ribes eradication work was figured at the rate of \$1.40 per eight hour day.

Status of Initial Ribes Eradication Work (December, 1936)

Acreage of Control Area	Acreage of Control Area Worked	Percentage of Control Area Worked	Acreage Still in Need of Protection
38,315	16,441	43.1	16,633

Nursery Sanitation

In addition to the state nursery at Washington Crossing and the S.C.S. nursery at Brunswick, there are 86 commercial nurseries growing white pine. Only 23 of these private nurseries contain 500 or more trees of this species. Three of these private nurseries applied for pine shipping permits under Federal Quarantine 63 during 1935, but after a preliminary survey revealed sizeable plantings of cultivated Ribes within the 1500' protective zones, the owners decided not to take further action.

The initial eradication of Ribes in the one mile sanitation zone around the state nursery was completed in 1932, and the few Ribes sites have been rechecked each year since that time. Initial protection was also established around the S.C.S. nursery at Brunswick during 1936, the state cooperating with the S.C.S. officials on this project. At the time of the control work was performed there were 660,000 white pines in this nursery. The control area around the two nurseries which are maintaining sanitation zones in New Jersey aggregates 795 acres.

Results of Ribes Eradication in Connection With Nursery Sanitation Project (1932-1936, Inclusive.)

Type of Erad.	Acreage Worked	Ribes Pulled		Total Man Days	Total Cost	Per Acre		
		Wild	Cult.			Cost	Ribes	Man Days
Initial	795	2,000	114	109	327.45	.412	2.6	.14
Re-Erad.	620	619	-	9	60.30	.097	1.0	.01
Total	1,415	2,619	114	118	387.75	.274	1.9	.08

These data are not included in the regular Ribes eradication summaries.

Ribes Nigrum Elimination

Survey of black currants made during 1928 in Morris County, also in parts of Monmouth and Sussex; 102 plantations of black currants were located in Morris County, 19 in Monmouth, 10 in Sussex, 1 in Warren, and 1 in Passaic Counties. In the area scouted, black currants were found in only one nursery. There is an unwritten agreement between the New Jersey nurseries not to sell these bushes. No systematic eradication of Ribes nigrum in the state has been attempted to date, but the owners of such Ribes have in a good many cases destroyed their bushes.

Plantations

As indicated previously, exclusive of E.C.W. plantings, 640,600 white pines were distributed from the state nursery during the period 1932 to 1936. The largest white pine plantings are located in Gloucester, Morris, Cumberland, Ocean and Somerset Counties. Smaller white pine plantings are found in the Counties of Monmouth, Warren, Burlington, and Sussex. During 1929, an inspection was made of the sites and environs of the white pine plantings, made from stock distributed during that year by the state Department of Conservation and Development. These locations were examined for wild and cultivated Ribes, and when Ribes and older pines were found nearby, these were inspected for infection. Owners in each case were advised regarding the disease and control methods. The plantations varied from 500 to 10,000 seedlings; and on 30 sites examined 323 cultivated currants and gooseberries (mostly red currants) were located - none of these bushes were infected. Card and map records of this work were kept for future reference. Blister rust control literature is now sent to each purchaser of white pine planting stock from the state nursery.

Ribes Eradication

No compensation has been paid for the 1827 cultivated Ribes destroyed in the state.

Field Surveys and Studies

Prior to 1929, general scouting during summer months by one or two cooperative scouts to locate pine, Ribes and infection - state-wide survey of forest types, by Hirt, made by Hirt during 1927. The details of the black currant survey conducted during 1928 are given under "Ribes Nigrum Elimination". A survey of nurseries growing pine and Ribes made in 1931.

Total Cost of All Blister Rust Control Work, 1925-1936, Inclusive.

Source of Funds	Amount Spent	Percentage of Total	
State B.R. Appropriation.....	14,801.01	46.0	46.1%
Other State Appropriations.....	36.80	0.1	By State
B.P.I.	6,271.28	19.7	
B.E. and P.Q.	2,189.66	6.9	
P.W.A.	3,081.48	9.7	53.8%
E.C.W.	346.50	1.1	by
T.P.A.	6,024.77	15.8	Gov't.
E.C.S.	223.00	0.7	
Total	\$31,779.52	100.0	

Expenditures from federal emergency funds since 1933 amount to 27.3 percent of the total cost.

The total expenditures for all control work include cost of administration, transportation, blister rust control agent activities, Ribes eradication, nursery sanitation, field survey and studies, and miscellaneous.

Future Work

Complete initial eradication work on 16,653 acres - application and maintenance of adequate nursery sanitation measures - complete survey of Ribes nigrum and eradication of such bushes - eradication of all Ribes within at least 300 feet of pine plantations and ornamental pine of value - additional scouting in northern section of state to determine in more detail pine, Ribes and infection conditions - adequate records and maps to show location of pine plantations, Ribes nigrum, native pine, infection, etc. - general informational work to keep public advised regarding the disease and its control.

BLISTER RUST CONTROL IN PENNSYLVANIA

Most of the native white pine in Pennsylvania is confined to the central portion of the state in the counties of Huntington, Mifflin, Snyder, Centre, Clearfield, Jefferson, Cameron, and Lycoming. It has been extensively planted on both state and private lands, as evidenced by the distribution of 6,507,355 white pines from the state nurseries during the period 1931 to 1936 inclusive. The pine areas are scattered in distribution, frequently remote in location, and small in size. There is a vast acreage of mixed growth, a large amount of which contains less than 20 percent pine, usually merchantable size trees and not much reproduction due to hardwoods. The following table shows the acreage and commercial value of white pine based on a cartographical survey made during 1926. Admittedly the figures are not accurate, but they represent the best data available at this time. In some sections of the state the white pine growth has considerable scenic value; but as a whole, it is probably not as important as in the other Northeastern States.

Acreage and Commercial Value of White Pine
(Based on 1926 cartographical survey)

	<u>Acreage</u>	<u>Value</u>
Pure white pine (80-100%) - (Over 6" DBH.....	51,854	\$5,807,648.
(Under 6" DBH	40,043	1,001,075.
Mixed white pine (21-29% pine in mixture.....	93,023	2,744,644.
(30-79% pine in mixture.....	28,078	1,572,368.
Other types with scattered white pine stocking and restocking*.....	157,630	(1,103,410. Pine Stocking (157,630. Restocking
White pine restocking in pure merchantable and mixed white pine types.....	68,662**	68,662.
Totals.....	375,628	12,455,437.

*Excludes those "other types" which have 1-20% pine (above restocking size), but do not contain white pine restocking.

**This acreage not included in total, as it is already listed under pure and mixed.

Basis for estimating value of white pine: merchantable stumpage figured at normal value of \$7 per M - average contents per acre, pure merchantable white pine = 16 M bd. ft.; mixed white pine, 21-29% = 4 M bd. ft.; mixed white pine, 30-79% = 8 M bd. ft.; and white pine, above restocking size in other types = 1 M bd. ft. Pure stands of white pine under 6" DBH given normal value of \$25 per acre. Estimated normal per acre value of white pine restocking: degree of restocking, light = \$1, medium = \$2, heavy = \$3.

Ribes Conditions

Wild Ribes are generally abundant throughout the entire state, the principal species being Ribes rotundifolium which occur in heavy concentrations in many locations. An average of 64.7 bushes per acre have been destroyed on the 414,204 acres examined for Ribes to date.

Pine Infection Conditions

The disease was discovered on white pine in Pennsylvania in April, 1905, by Samuel N. Baxter at a nursery in Dreshor near Philadelphia. This is the earliest known record of blister rust being found in this country. It was not until 1909 that another infection was reported in the state, one imported infected white pine being found at

Swanton Junction by J. F. Collins. Subsequent discoveries of blister rust were reported in various counties in Pennsylvania from 1910-1926, chiefly on planting stock imported from European countries. Intensive scouting since 1926 has revealed that the rust on pine and Ribes is generally distributed, and at the present time can probably be found in most instances where pine and Ribes occur in close association.

Pine infection studies made in unprotected areas during the spring of 1935 show that the disease is increasing at an alarming rate. Ten plots, comprising $9\frac{1}{4}$ acres, were laid out in the Counties of Clarion and Potter. These plots contained 3,984 white pines of which 2,618, or 66 percent, were infected with 10,605 cankers. The intensification of the disease is indicated by the fact that 62 percent of the cankers were 1930 or 1931 origin. Fifty percent of the infected trees had stem cankers, and over 14 percent of the diseased pines had been killed.

Policy

Prior to 1929, the work was limited chiefly to scouting for pine, Ribes and infection during the summer months by one or two temporary men employed cooperatively by the State and Federal Departments of Agriculture. The first demonstrations of control methods were held during 1928 by the Department of Forests and Waters in cooperation with the Division of Blister Rust Control. In 1929, the work was organized on the following basis: The State Department of Agriculture agreed to assume administrative direction of cooperative employees, conduct such control activities as approved each year by the cooperating agencies, and to enforce state laws under which blister rust control is conducted. The Department of Forests and Waters agreed to undertake the application of local control measures on state owned forests; cooperate with counties, towns, associations, and individuals in the application of local control measures, and provide supervision and checking of such work. In 1930, the Department of Forests and Waters took over the responsibility, through its state blister rust leader and district foresters, of directing all control activities in the state. Most of the Ribes eradication work during 1929 and all that done in 1930 was performed on state lands. Such state work was continued during 1931 and 1932. In addition during these two years, a few temporary agents were employed during the summer months to conduct control work in cooperation with individual owners. These agents did the necessary scouting for Ribes and assisted owners by supervising the eradication of concentrations of such bushes on their properties. During 1933-1936, the regular cooperative work was necessarily curtailed due to the activities conducted under the E.C.W., P.W.A., W.P.A., A.R.A., E.C.S. and N.Y.A. The control work conducted on private lands under the Emergency programs was directed by the three district leaders, however such activities on state lands were supervised by two state agents. The latter were assisted by E.C.W. checkers and technical foremen, while the former were provided with supervisors. Two of the district leaders were not appointed until August 1935.

Informational and Service Activities of Blister Rust Control Leaders

No records are available of such activities prior to 1932. An incomplete summary of such activities since 1932 shows 3,479 publications were distributed, 76 posters and signs placed, blister rust news items were published in 30 newspapers, six displays placed, and talks were given at four meetings attended by 143 persons.

A total of 788 individuals were interviewed for the first time, 444 follow-up calls were made, and 44 individuals were given instructions in the field.

Individual Cooperation in Blister Rust Control Work
1929-1936, Inclusive

Individual cooperation in control work was secured each year, except 1930, during the period of 1929 to 1936, inclusive; 238 owners expending \$1,849.28 for Ribes eradication work on their properties. The amount spent by individuals includes \$331.45 for nursery sanitation work, and \$151.00 Ribes compensation paid by three nurserymen during 1936.

Results of Ribes Eradication Work, 1929-1936, Inclusive
(Initial and Re-eradication)

Program	Acreage Worked	Ribes Pulled		Cost				Per Acre Cost
		Wild	Cult.	State	Indiv.	Govt.	Total	
Regular	75,481	3,786,240	5,502	37,797.14	1366.83	2,032.62	41,246.59	.546
E.C.W.	203,016	11,740,878	15,215	360.00	-	306,361.89	306,721.89	1.51
P.W.A.	17,474	2,594,171	2,361	-	-	32,475.23	32,475.23	1.86
W.P.A.	109,579	8,554,095	8,212	-	-	188,046.14	188,046.14	1.72
A.R.A.	3,980	34,787	10	-	-	3,076.59	3,076.59	.773
S.C.S.	4,326	69,983	155	-	-	3,165.38	3,165.38	.732
N.Y.A.	348	4,242	-	100.00	-	220.80	320.80	.922
Total	414,204	26,784,396	31,455	38,257.14	1366.83	555,428.65	576,062.62	1.39

The above summary excludes nursery sanitation work during the period 1930-1936, inclusive, when a separate record was kept of such activities.

The cost of the Ribes eradication project includes owners' labor (valued at 40 cents per hour) and all expenditures for wages of laborers, scouts and foremen employed in locating and pulling Ribes - cost of crew transportation and miscellaneous expenses for trail paper, picks, etc. In the case of E.C.W. personnel, the cost of their total time on Ribes eradication work was figured at the rate of \$1.35 per eight hour day in 1933, \$1.40 in 1934, \$1.50 during 1935 and 1936. Control work was conducted from 64 C.C.C. camps during 1933, 56 in 1934, 72 in 1935, and 62 during 1936.

A small amount of control work was done prior to 1929 in connection with the protection of three state nurseries. This project was begun in 1924 at the Clearfield nursery, and in 1926 and 1928 this area was reworked. In 1927, the Greenwood and Mount Alto nurseries were initially protected. During 1928, three small demonstrations of control work were given by Federal men for the benefit of members of the State Department of Forest and Waters. Acreage, Ribes, and cost data are not available for the work prior to 1929.

Results of First Re-eradication of Ribes, 1931-1936

Program	Total Acreage Re-Worked	Ribes Pulled		Total Man Days	Total Cost	Per Acre		
		Wild	Cult.			Cost	Ribes	Man Days
Regular	10,596	484,436	25	2,741	8,947.68	.844	45.7	.26
E.C.W.	79,072	2,507,971	1460	74,955	113,959.48	1.44	31.7	.96
P.W.A.	1,236	76,640	-	739	3,179.41	2.57	62.1	.60
W.P.A.	13,945	1,011,936	503	6,947	25,656.34	1.84	72.6	.50
A.R.A.	264	156	-	54	218.40	.827	0.6	.76
S.C.S.	214	2,190	-	410	635.73	2.97	10.2	1.82
Total	105,326	4,083,327	1993	85,896	152,597.04	1.45	38.8	.82

No satisfactory comparison can be made between the per acre values listed in the two preceding tables, since only 34.1 percent of the area initially protected has been re-

and 1000 foot sanitation zones were usually constructed to the Ribes sites.

Results of Ribes Eradication Work in Allegheny National Forest, 1929-1936, Inclusive
(These data are included in preceding Ribes eradication summaries)

Program	Type of Erad.	Acreage Worked	Ribes Pulled		Cost				Per Acre	
			Wild	Cult.	B.P.I.	Forest Service	E.C.W.	Total	Cost	Ribes
B.P.I.	Initial	891	129,019	8	136.56	507.71	-	644.27	.723	144.8
	Re-Erad.	627	19,993	-	71.29	272.06	-	343.35	.548	31.9
	Total	1,518	149,012	8	207.85	779.77	-	987.62	.661	98.2
E.C.W.	Initial	3,267	630,356	22	-	-	3,166.92	3,166.92	.969	192.9
	Re-Erad.	526	41,068	-	-	-	646.41	646.41	1.23	78.2
	Total	3,792	671,424	22	-	-	3,813.33	3,813.33	1.01	177.1
Total	Initial	4,168	759,375	30	136.56	507.71	3,166.92	3,811.19	.917	182.6
	Re-Erad.	1,152	61,061	-	71.29	227.06	646.41	989.76	.859	53.0
	Total	5,310	820,436	30	207.85	779.77	3,813.33	4,800.95	.904	154.5

Status of Regular Ribes Eradication Work - December, 1936

Program	Acreage of Control Area	Acreage of Control Area Worked	Percentage of Control Area Worked	Acreage Still in Need of Protection
Initial	556,707	308,878	55.5	247,829
Re-Erad.	110,432	105,326	95.4	5,106

The control area for the initial work includes the acreage initially cleared of Ribes plus the estimated acreage in each township still in need of initial protection. The latter estimates were made by the state and district blister rust control leaders at the end of the 1936 season. An additional 439,774 acres of initial control work was also reported to protect 27,982 acres of scattered white pine stands, but these data are not included in the above table as the practicability of such control work is questionable.

The control area for the re-eradication projects comprises the total area re-exposed for Ribes plus the estimated acreage now in need of re-eradication work.

Nursery Sanitation

Nursery sanitation has been restricted to four state nurseries located at Clearfield, Greenwood, Mount Alto and Rockview and six commercial pine growing nurseries. Ribes eradication work was first conducted around the Clearfield nursery in 1924. During 1926, a re-examination was made within a 900 foot protection zone. The area was again reworked in 1928 including all white pine plantations in the vicinity of the nursery and for a distance of 300 feet beyond the plantings. In 1927, initial control work was performed at the Greenwood and Mount Alto nurseries. Acreage, Ribes, and cost data are not available for the work done prior to 1930. During 1930, all three state nurseries, operated by the state Department of Forests and Waters, were re-eradicated of Ribes and protected by 1500 foot sanitation zones. The sanitation zones at the Greenwood and Mount Alto State nurseries were again re-examined in 1932, and a zone was also partially established around the Rockview State Prison nursery. Control has been established and is being maintained around all the four state nurseries and five commercial nurseries growing white pine. One private nursery discontinued protection work during 1936. The maximum control area of the nine nurseries maintaining control amounts to 5,084 acres. Six of these nurseries worked during 1936 had a total of 6,272,000 white pines at that time. A few additional private nurseries will apply protective

source during the spring of 1937.

Results of Ribes Eradication Work in Connection with Nursery Sanitation Projects
(1930-1936, Inclusive)

Type of Work	Acreage Examined	Ribes Pulled		Total Man Days	Total Cost	Per Acre		
		Wild	Cult.			Cost	Ribes	Per Acre
Initial eradication	3,809	33,460	466	324	1,123.48	.295	10.1	.05
Re-Eradication	5,566	46,546	31	1,925	4,326.22	.777	8.4	.5
Total	9,375	80,006	497	2,249	5,449.70	.531	9.1	.51

These data are not included in the Regular Ribes eradication summaries.

Ribes Nigrum Elimination

Cultivated Ribes survey made in Wayne County in 1925, 279 black currants being found. General scouting and the school campaign showed that Ribes nigrum existed in most sections of the state, but these bushes are apparently not very numerous. During 1929, a few black currants were eradicated on private lands adjoining state forests which were cleared of wild Ribes. Due to the small number of black currants found near the white pine areas, it may be possible to eradicate such bushes in conjunction with the regular control work and thus eliminate a special black currant project.

White Pine Blister Rust Canker Elimination

E.C.W. crews were used on blister rust canker removal work in state plantations at various times during the period from January, 1934 to December, 1936. The following is a summary of the results of this work:

Year	Est. No. Pines Examined	No. Fatally Infected Pines Cut Down	No. Pines Treated For Infection	No. Branch Infections Removed	Total Man Days	Total Cost
1934	42,566	3,012	9,537	176,874	807	\$ 1,385.00
1935	207,848	15,435	40,731	180,783	1,892	3,207.02
1936	210,102	9,141	24,574	84,774	1,529	2,887.31
Total	460,516	27,588	74,842	452,436	4,228	7,579.33

Cultivated Ribes Compensation

Although 31,952 cultivated Ribes have been destroyed in Pennsylvania no compensation for such bushes has been paid except in connection with nursery sanitation projects. During 1936, three nursery-men paid 53 owners a total of \$151.00 for the destruction of 335 plants.

Surveys

During 1927, a cooperative school survey resulted in the rust being found on Ribes in 37 counties in an area extending nearly to the Ohio border on the west and on the south to the Maryland line. In 1928, a somewhat similar infection survey was conducted by utilizing the forest fire warden personnel (4,100 men) of the Department of Forests and Waters. Reports were received from 171, or 4 per cent of the men, scattered over 60 of the 53 counties in the state. A total of 91 wardens submitted 269 Ribes specimens, 14 of which were infected with the rust. During 1929, another Ribes infection survey was carried on by the Department of Forests and Waters through their field personnel numbering about 150 men. As a result blister rust was found in 15 locations in 11 counties, in all of which infection had been previously reported.

A white pine survey of the state was begun in January, 1931. This work was performed by the blister rust control personnel with the assistance of the field personnel of the Department of Forests and Waters. At the end of 1932, the project had been completed in 25 counties and 9 additional counties partially surveyed. During 1933-1936, pine and control area mapping was carried on under the E.C.W., P.W.A. and W.P.A. Programs during the late fall, winter, and early spring months. The following table summarizes the results of this work.

Pine and Control Area Mapping

Program	Period	Total Acreage Mapped	Acreage Examined But Not Mapped	Miles Boundary Lines Painted	Total Man Days	Total Cost
E.C.W.	1933-36	184,971	"	1,424	19,617	71,884.41
P.W.A.	1933-35	32,207	"	183	296	1,266.87
W.P.A.	1935-36	176,856	"	1,645	6,574	28,568.49
Total	-	394,034	"	3,252	26,487	101,719.77

Several hundred thousand acres of non-pine land were also eliminated, but no definite record was kept.

The cost of this mapping in Pennsylvania has been higher than in the other Northeastern States chiefly due to the scattered distribution, remote location, and small size of the pine areas, use of compass and chain in mapping the boundaries of the white pine types, and the painting of most of the control area boundary lines.

Pine and control area mapping has been completed in 73 townships and partially finished in 242 others. No mapping has been performed in 460 townships. Due to the scattered distribution of the white pine the feasibility of control work is questionable in 373 of the latter townships. It is estimated that 10,160 man days work will be required to complete the mapping project in the towns where control work is practicable, and an additional 14,281 man days for the work in the questionable townships.

Field Studies Other Than Surveys

In the spring of 1932, two pine infection study plots were established in Union and Pike Counties. These plots will be re-examined periodically to determine the progress of the disease and the effectiveness of the control work performed. Later in the year, two salvage study plots were made in heavily infected plantations in the same two counties. The purpose of these plots was to determine if it is possible and economically feasible to salvage selected final crop trees by pruning and releasing, and then cutting out any blister rust cankers remaining after these operations.

Effectiveness of Blister Rust Control

Field studies were made in Pennsylvania during January and February, 1935 to determine the amount of blister rust infection on white pines in protected and unprotected areas. The studies in unprotected areas show that the amount of disease is increasing at an alarming rate. Ten plots, comprising $9\frac{1}{2}$ acres, were laid out in the Counties of Clarion and Potter. These plots contain 3,984 white pines, of which 2,618, or 66 percent, were infected with 10,605 cankers. The intensification of the disease is indicated by the fact that 62 percent of the cankers were of 1930- or 1931 origin. Fifty percent of the infected areas have trunk cankers and over 14 percent of the diseased pines have already been killed.

To determine the effectiveness of Ribes eradication in controlling the rust, 5,644 pines were examined for infection in 10 separate one-acre plots located in areas protected during 1929 and 1930 in the counties of Potter, Clinton and Cameron. At the time of the control work, Ribes rotundifolium were generally distributed throughout the area, the bushes being abundant and many of them of large size. This protection work represented the initial efforts to control the disease outside of nurseries in Pennsylvania. Of the 5,644 pines in the plots, 1,453, or 25.7 percent, were found infected with cankers. However, only 1.7 percent of the total diseased trees became infected after the areas were protected and only 1.3 percent of the total cankers originated after that time. These good protection results were obtained in spite of the large amount of Ribes prior to the application of control measures, and even though the eradication crews were composed chiefly of inexperienced men.

Total Cost of All Blister Rust Control Work, 1925-1936, Inclusive
(Including Federal control project at Allegheny National Forest)

Source of Funds	Amount Spent	Percentage of Total	
State B.R. Appropriation	81,204.61	9.00	9.24% by State
Other State Appropriations.....	310.42	0.04	
Individuals.....	1,849.28	0.20	
B.P.I.	31,619.21	3.50	90.76% by Gov't.
B.E. and P.Q.	6,465.64	0.72	
Forest Service	779.77	0.09	
P.W.A.	45,474.63	5.04	
E.C.W.	480,578.47	53.24	
W.P.A.	247,013.37	27.36	
A.R.A.	3,076.59	0.34	
S.C.S.	4,095.38	0.45	
N.Y.A.	220.80	0.02	
Total	\$ 902,688.17	100.0	

Expenditures from federal emergency funds since 1933 amount to 86.45 percent of the total cost.

The total expenditures for all control activities include cost of administration, supervision, blister rust control agent activities, Ribes eradication, eradication assistants, nursery sanitation, field surveys and studies, pine and control area mapping, and miscellaneous.

Future Work

Complete initial control work on 247,829 acres - pine plus protection zones - (based on township estimates made by the state and district leaders at the close of 1936). Maintenance of control by reworking 5,106 acres now in need of re-eradication. Complete pine and control area mapping in townships where control work is practicable - establish and maintain sanitation zones around all important pine growing nurseries - eradication of Ribes nigrum within important white pine growing section of state - continuation of field studies.

See Letter 5/19/37 Filler (Admin.)

BLISTER RUST CONTROL ACTIVITIES

W.P.A. PROGRAM

NORTHEASTERN STATES - 1935 AND 1936

April 15, 1937.

E. C. Filler
Senior Pathologist
Division Plant Disease Control.

BLISTER RUST CONTROL ACTIVITIES UNDER THE WPA PROGRAM
IN THE NORTHEASTERN STATES

Allotments

WPA funds totaling \$2,023,711.00 were allocated for blister rust control work in the Northeastern States during 1935 and 1936. The allotments by states to December 31, 1936 were as follows:

Maine.....	\$346,562.00
New Hampshire.....	332,087.00
Vermont.....	194,843.00
Massachusetts.....	209,169.00
Rhode Island.....	27,612.00
Connecticut.....	57,327.00
New York.....	594,004.00
New Jersey.....	5,358.00
Pennsylvania.....	256,749.00

The figures listed above represent the aggregate amount of money provided through various allotments to each state. The original allotments were made July 25, 1935. On May 26, 1936, a recession was made in each state. The withdrawals were largely offset June 24, 1936 through increased allotments by the President. Again on July 13 and September 2, the President awarded additional money. Also during 1936, the Bureau, with the approval of the WPA, made certain adjustments in funds between states on August 24, November 27 and December 31. The homeopathic procedure in allotting funds made it somewhat difficult in planning field activities, but did not cause any serious complications.

Purpose of Allotments

The specific objectives have been outlined as follows:

1. To protect our national resources of white pine from the blister rust by the systematic, thorough, and efficient elimination of Ribes from definite areas.
2. To employ in the locality of the work as many of the persons on public relief as may effectively be used.
3. To distribute opportunities for work as widely, geographically, and as equitably as may be practicable.
4. To aid in all possible ways the accomplishment of the other purposes of the Emergency Relief Appropriation Act of 1935.

Economic and Social Value of Project

The white pine crop in the Northeastern States comprises over $7\frac{1}{2}$ million acres and has a normal commercial value of \$315,000,000. Millions of white pines are also being planted each year in connection with reforestation activities. The scenic and recreational value of this crop is likewise of tremendous importance.

The WPA program has played an important part in the protection of this valuable land from blister rust. Since under this program 1,500,159 acres (including 747,437 acres of white pine) have been cleared of Ribes bushes, the greatest part of the disease. Thousands of acres of pine reproduction have been protected, thus assuring the development of future commercial stands. The program has made possible the systematic working of large areas, rather than individual units. It has also permitted the application of control measures on lands where such work was urgent, rather than basing the selection on local cooperation. It has been possible to work many remote areas, also areas containing an abundance of Ribes, where the cost of control had prevented other application of protection measures. This control work has served to eliminate many sources of infection that otherwise would have persisted. The maintenance of protection on areas initially worked several years ago was also materially advanced by the WPA program, particularly in townships where such activities would have been impossible without emergency funds.

The expenditure to December 31, 1936 of \$1,960,436.02 WPA money on blister rust control in the rural portions of the Northeastern States has given 7,982 security-wage workers 3,664,695 man hours of useful self-respecting employment, directly benefiting persons who would otherwise have been on town relief, especially in communities where there was a lack of other projects of a permanent public benefit. Our project was especially adapted to the employment of relief workers. It provided healthy employment where skill, except for supervision, was not necessary. The location of the work was such, that in most instances, transportation was not required in getting the men to and from work. In fact, the entire cost to the Government for transporting security-wage workers up to December 31, 1936 amounted to only \$31,860.77. Most important of all, wages comprised 94.7 percent of the entire cost of the program. The expenditures have also materially aided in stimulating local business by increasing the amount of money in circulation.

Estimating that each of the 8,116 WPA employees that have worked on our project had three dependents, a total of 32,464 individuals were, at some time during the program, being fed, sheltered and clothed from wages earned in connection with this work. When the project was initiated very acute conditions in many communities were brought to our attention. Suffering from hunger was commonly noted. It was a frequent occurrence for workers to report for duty with little or no breakfast and without lunch or funds to provide one. The elimination of these conditions, which disappeared gradually as the workers received reimbursement for their services, had a social value impossible to estimate.

The successful performance of Ribes eradication work required the closest cooperation between the individual members of the field units. It has been the constant aim of the district leaders and the local supervisors to develop this cooperative spirit and their efforts have met with unusual success. This has not only measurably increased the efficiency of the work in hand, but the schooling that the workers have had in this cooperative effort should have a helpful effect upon them as members of the community in which they reside.

One of the outstanding indirect accomplishments of this work has been to demonstrate to many individuals that the Bureau requires of its personnel full attention to the duties at hand. Many of the laborers originally had the idea that public work in general was not too laborious; not too important perhaps. They have gained a far different understanding as a result of their experience on the blister rust control project. Workers who have been unwilling to carry out instructions have been dealt with summarily to the credit of public work in general.

The enforcement of regulations prohibiting smoking in the woods has also had a marked effect on the men. It has effectively demonstrated the need for the exercise of care to prevent the destruction of our forests through the careless use of smoking materials.

The interest displayed by the average worker has been surprisingly high, particularly when the foreman in charge has successfully stimulated a competitive spirit among the members of his crew.

Over 8,100 men have received training in Ribes eradication work, and many of these persons will be available for similar work in the future. The training should also enable many of these men to maintain control of blister rust on their own properties.

Responsibilities and Direction of Work

The WPA funds with which we are concerned were specifically allocated to the United States Department of Agriculture, the Bureau of Entomology and Plant Quarantine, for expenditure by the Division of Plant Disease Control. The work is handled directly by the Department cooperating with the State WPA and DGC officers for labor assignments and with the U. S. Treasury for accounting and disbursing.

The WPA blister rust control work in each state is performed under the general plan embodied in the Memoranda of Understanding existing between the Bureau of Entomology and Plant Quarantine of the United States Department of Agriculture and cooperating States, and is fitted in with other control activities in the states so as to make a unified, coordinated work program. The Bureau, however, carries direct responsibility for both the fiscal and the technical phases of the work. The state forester or other collaborator in the state is consulted as to policies and is kept fully advised at all times. The state official administering the state plant pest laws enforces such state laws as may be available for the effective prosecution of blister rust control work and deputizes the cooperative employees to permit the destruction of such pine and Ribes as may be necessary and as provided by state laws. Federal money cannot be used to pay compensation for plants destroyed.

The Senior Pathologist of the Regional Office was made "Project Manager" for the WPA blister rust control program in the Northeastern States and was delegated the funds allotted for the respective nine states in the region. He was also given authority to obtain services and supplies and to incur expenditures under each state allotment. Letters of authorization were issued by the Bureau to him and to each state leader. These men in turn issued monthly sub-letters of authority where necessary to employees working under their direction.

Field Supervision

The successful results under the WPA program can be attributed in a large extent to the availability of a trained force of state and district leaders and supervisors to direct the project in each district. Through the services of these men, it was possible to get the WPA employees working in the field within a few days after funds became available. These leaders were accustomed to supervising large groups of men and had little difficulty in adapting themselves to the WPA program. Most of the district leaders (the

Qualifications Established for Labor

1. Must be physically able to work all day.
2. No serious defects of eyesight.
3. Stable personality, good habits, good conduct, thoroughness, industriousness, reliability and willingness.

Source of Labor

All labor was secured, prior to August 13, 1936, direct from the local offices of the National Reemployment Service, at least 90 percent of the workers being taken from certified relief rolls. One of the outstanding experiences in the entire WPA program has been the evidence of mutual cooperation between the NRS and our district leaders. The closest cooperation prevailed from the inception of the work. It was through the complete cooperation of the NRS that, at the beginning of the program, we were able to have workers in the field within a few days after the release of the allotments. This was a real accomplishment; when it is appreciated, that in most sections at that time not a single copy of the necessary WPA and NRS employment record forms had been received. The local offices of the NRS have cooperated with the district leaders 100 percent. The facilities of the local NRS offices have seldom been such that they could keep their records up to date. As soon as this fact was fully appreciated, our leaders immediately offered to interview listed men for the purpose of ascertaining their employment status at the time. It was only through the adoption of this procedure that we were able to procure the workers as needed. It also eliminated the needless preparation of USES 325 forms in cases where the registrants were employed, but had not notified the NRS to that effect.

After August 13, 1936, desired labor was obtained through the WPA organization. With few exceptions, good cooperation was evidenced at all times, but the service was not as prompt as under NRS. In Pennsylvania, one of the district WPA managers was reluctant to furnish the desired number of workers, because the men on our project were paid higher rates than those paid to the workers on local projects. The matter was reported to the state office of the WPA, but was never satisfactorily adjusted. To offset this condition, additional workers were employed in other sections of the state.

The 90-10 ratio between relief and non-relief workers was consistently maintained in each state, except during the period June 1 to August 28, 1936, when 406 workers were exempted from the 90-10 ratio in the States of Maine, New Hampshire and Vermont.

At the close of the 1935 Ribes eradication season Mr. Burgess, in charge of Gipsy and Brown-tail Moth control work, was advised as to the number of WPA workers we were releasing in each town. Consequently, many of these employees were transferred to his projects without interruption in their services. This arrangement materially aided Mr. Burgess in filling his quota of employees. Unfortunately for our project, these workers could not be released from the Gipsy and Brown-tail moth work when we needed them the following May. This past fall we again notified Mr. Burgess regarding the men whose services we planned to discontinue. However, due to a curtailment in funds, Mr. Burgess was unable to use any of the men we released.

Field Personnel

Funds for blister rust control work under the WPA program were made available July 25, 1935, and labor was being employed by July 29. During the first half of August, a total of 1,800 persons were on the WPA payrolls. For the next 2½ months the WPA personnel averaged 2,955 employees. During the period November 1, 1935 to April 30, 1936, the number of workers was reduced to an average of 443. The force averaged 4,146 employees during the eradication season from May 1, 1936 to September 30, 1936. From October 1 to December 31, 1936, the number of employees averaged 391. A peak number of 4,457 workers were employed from July 1-15, 1936, and the average number of employees was 1,937 per semi-monthly period during the entire program to December 31, 1936.

Table 1.--Employment on Blister Rust Control Under W.F.A. Program
(July 29, 1935 to December 31, 1936)

Security Wage Workers									All Employees		
Relief			Non-Relief			Appointees*					
Man Hrs.	Man Mos.	Man Yrs.	Man Hrs.	Man Mos.	Man Yrs.	Man Hrs.	Man Mos.	Man Yrs.	Man Hrs.	Man Mos.	Man Yrs.
538,892	4,574.9	381.2	55,891	435.3	36.3	35,328	184.0	15.3	680,111	5194.2	432.8
530,880	4,075.6	339.6	116,509	915.4	76.3	35,482	184.8	15.4	672,871	5175.8	431.1
362,670	2,939.5	245.0	40,175	312.1	26.0	22,771	118.6	9.9	445,616	3370.2	280.1
204,728	2,289.7	190.8	8,821	68.4	5.7	26,362	137.3	11.4	329,909	2495.4	207.1
49,608	389.4	32.5	3,639	28.6	2.4	960	5.0	0.4	54,206	423.0	35.1
98,863	767.4	63.9	1,831	14.1	1.2	3,514	18.3	1.5	104,208	799.8	66.1
506,976	7,671.8	639.3	37,462	291.5	24.3	63,091	328.6	27.4	1,087,529	8291.7	691.1
7,728	60.9	5.1	-	-	-	1,306	6.8	0.6	9,034	67.7	5.1
448,508	3,696.0	308.0	21,518	177.2	14.8	31,084	161.9	13.5	501,110	4035.1	336.1
3,373,249	26,465.0	2205.4	285,846	2242.6	187.0	219,898	1145.3	95.4	3,884,593	29,882.9	2487.1

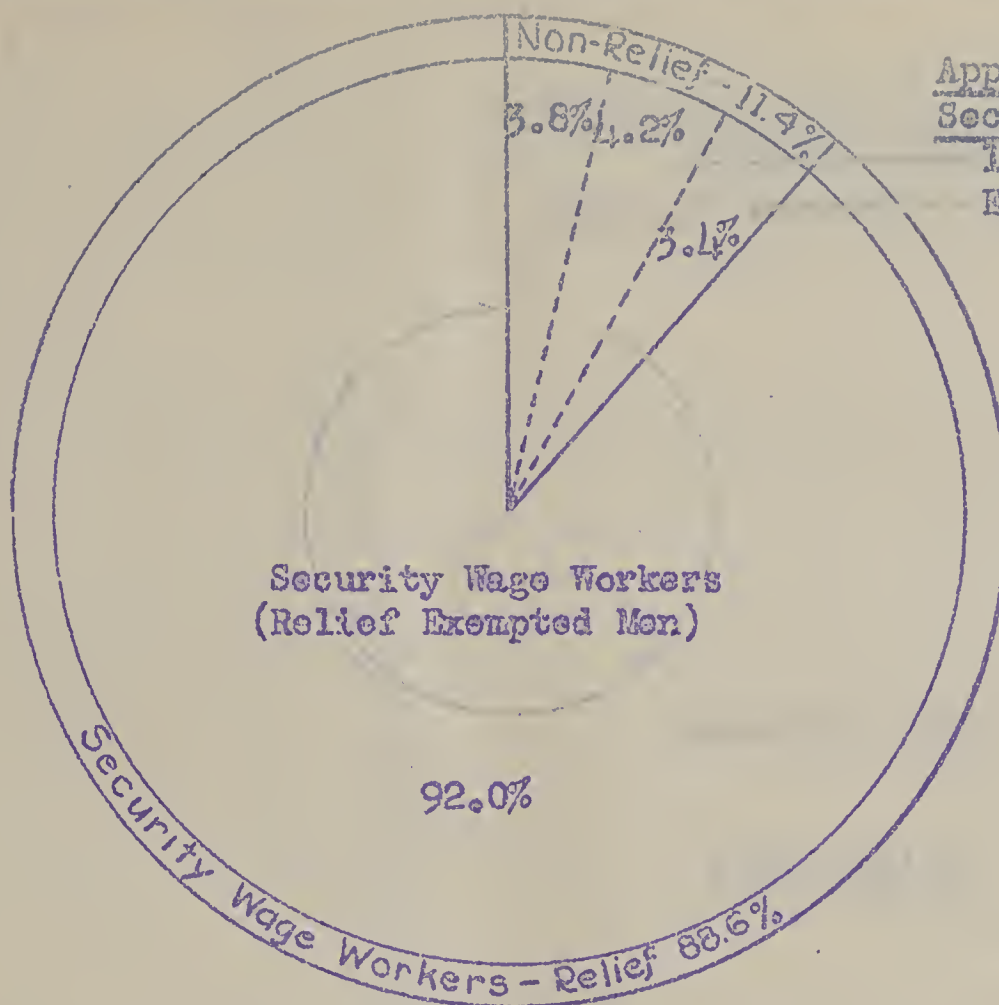
* Includes time paid supervisors for all accumulated annual leave taken after completion of their field services.

Table 2.--Peak Employment and Man Year Cost on Blister Rust Control Under WPA Program
Northeastern States - July 29, 1935 - December 31, 1936.

State	Peak Employment		Man Year Cost		Man Month Cost	
	No. Men	Period	Over All (1)	Net (2)	Over All	Net
Calif.	741	8/16-31 1936	783.12	811.82	65.26	67.65
Ill.	905	6/1-15 1936	747.90	775.59	62.32	64.63
Ind.	632	8/16-31 1936	682.81	707.75	56.90	58.98
Mass.	327	6/1-15 1936	938.39	992.84	78.20	82.74
N. H.	64	6/1-15 1936	749.37	757.96	62.45	63.16
N. J.	115	9/1-15 1935	832.78	851.97	69.40	71.00
N. Y.	1184	6/1-15 1936	836.59	871.14	69.71	72.60
Penn.	14	8/16-31 1935	881.54	935.25	73.46	82.10
Conn.	608	7/16-31 1936	734.50	765.22	61.20	63.77
Totals	-	-	788.02	819.44	65.87	68.29

(1) Based on total expenditures divided by number of security-wage and appointee man years.
(2) Based on total expenditures divided by number of security-wage man-years.

Personnel by Employment Classes on Blister Rust Control
WPA Program in Northeastern States - July 29, 1935 - December 31, 1936 Inclusive



Total Man Months of Employment - 29,852.9

(Includes 406 men being exempted from 90-10 ratio in three states)

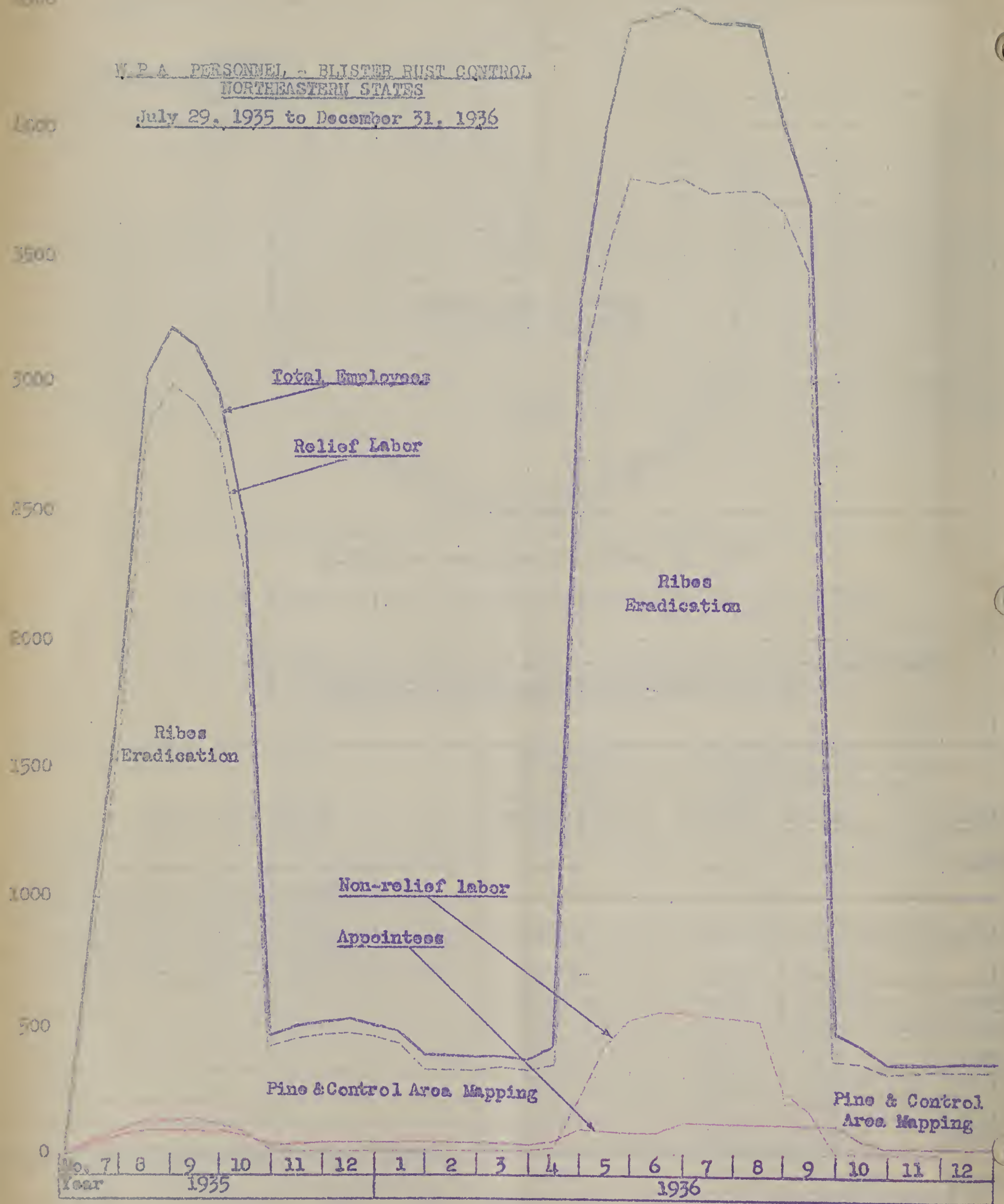
Table 3-Man-Months of Employment by Relief and Non-Relief Employees
And the Status in Maintaining the 90-10 ratio

State	Total Man-Months Employment		Man-Months Surplus or Deficit Over 90-10 Ratio	Reason for Deficit
	Relief	Non-Relief*		
Maine	4,574.9	610.8	-102.5	51 Non-relief laborers, exempted from 90-10 ratio, employed for 135.2 man months.
N. H.	4,075.6	1,095.2	-642.4	233 Non-relief laborers, exempted from 90-10 ratio, employed for 621.3 man months
Vt.	2,939.5	426.8	-100.2	122 Non-relief laborers, exempted from 90-10 ratio, employed for 264.4 man months.
Mass.	2,289.7	203.6	+ 50.8	"
R.I.	389.4	33.6	+ 9.7	"
Conn.	767.4	32.0	+ 53.3	"
N. Y.	7,671.6	609.5	+ 242.9	"
N. J.	60.9	6.3	+ 0.5	"
Penna.	3,696.0	331.4	+ 79.3	"
Totals	26,465.0	3,349.2	-408.6	406 Non-relief laborers exempted from 90-10 ratio, employed for 1,020.9 man months.

* Excludes time paid supervisors for accumulated annual leave totaling 1163 man days or 38.7 man months, taken after completion of their field services.

W. P. A. PERSONNEL - BLISTER RUST CONTROL
NORTHEASTERN STATES

July 29, 1935 to December 31, 1936



Hours of Work and Wage Scales

At the beginning of the WPA program, the maximum hours of work per month permitted WPA laborers on blister rust control was 150. The working schedule was established at twenty 8-hour days per month. This arrangement was continued until March 16, 1936, at which time the maximum number of hours per month was reduced to 128 and the working schedule changed to 16 eight-hour days per month.

After conducting the program for about two months, we were advised that the wage scales would have to be approved by the respective state administrators. As a result of personal conferences with those men, uniform state rates, based on the highest county rate in the district where the project was being operated, were approved for each state. In some states, considerable difficulty was experienced in securing approval of the uniform rates, but the objective was finally accomplished in each state of the region. About July 1936, it was necessary to again contact the state administrators in order to obtain their approval of rates based on prevailing wages. The continuance of uniform state rates was approved in all cases. In four states, Maine, Connecticut, New York and Massachusetts, the 128-hour per month basis was continued, but it was established as follows in the other states: New Hampshire, 125; Vermont, 138; Rhode Island, 123; and Pennsylvania, 105.

The greatest difficulty in getting the approval of state rates occurred in New Hampshire and Massachusetts. In the former state, the administrator approved the continuance of uniform rates until October 30, 1935, but by that time we had completed our eradication work for the season. During the fall and winter months, he insisted upon county rates for unskilled workers, but did agree to the continuance of a statewide rate for the skilled laborers on our mapping project which employed only skilled men. The uniform state rate for skilled labor was used throughout the program, but during May 1-July 31, 1936, it was necessary to pay unskilled workers on the basis of county rates. These local rates were abandoned August 1, 1936 and state rates approved for all classes of employees.

In Massachusetts, the assistant WPA administrator held up final approval of uniform rates for several months due to ~~narrow~~ interpretation of the WPA regulations and their application. He was not convinced that our project had a physical continuity, even though the WPA office at Washington phoned him that the proposed wage scale would meet with their approval. ~~It was not until~~ the assistant administrator was overruled by higher state officials that he finally consented to the uniform state rate.

The only other exception to the uniform state rates occurred November 1936 in Pennsylvania where the state administrator insisted upon reducing the hours to 96 per month in a unit of four counties (Bradford, Wyoming, Centre and Susquehanna) situated in the northeastern part of the state, a considerable distance from the other contiguous counties in which the project was being conducted. As only this one new district was involved in these special rates, it did not complicate our office procedure to any appreciable extent.

The WPA has been successful in employing on blaster rust control work a large number of workers on local projects; and in most instances the wages were higher. In spite of this condition, no complaints were received at the Cambridge Office, except the one made by the district office in Pennsylvania. The state administrators also advised that very few criticisms had been received by their offices as to the differences in wages.

Approved WPA Wage Scales for Federal Blister Rust Control Work
In Northeastern States

Period	Maximum Hours Per Month	Wage Rates by Personnel Classes			
		Unskilled	Inter- mediate	Skilled & Technical	Professional
Maine					
1/1/35 - 3/15/36	130	\$52.00	-	\$75.00	-
3/16/36 - 7/31/36	128	52.00	-	75.00	-
8/1/36 - 12/31/36	128	52.48	-	75.52	-
New Hampshire					
1/1/35 - 10/31/35	130	52.00	-	75.00	-
11/1/35 - 7/31/36	128	40.00-52.00*	-	75.00	-
8/1/36 - 12/31/36	125	50.00	-	75.00	-
Vermont					
1/1/35 - 3/15/36	130	44.00	-	63.00	-
3/16/36 - 7/31/36	128	44.00	-	63.00	-
8/1/36 - 8/31/36	128	44.80	-	64.00	-
9/1/36 - 12/31/36	138	48.30	-	69.00	-
Massachusetts					
1/1/35 - 3/31/36	130	55.00	65.00	85.00	-
4/1/36 - 5/30/36	130	60.50	71.50	93.50	-
6/1/36 - 12/31/36	128	60.50	71.50	93.50	103.40
Rhode Island					
1/1/35 - 3/15/36	130	55.00	-	85.00	-
3/16/36 - 7/31/36	128	55.00	-	85.00	-
8/1/36 - 12/31/36	123	55.35	-	85.48	-
Connecticut					
1/1/35 - 3/15/36	130	55.00	-	85.00	-
3/16/36 - 7/31/36	128	55.00	-	85.00	-
8/1/36 - 12/31/36	128	55.04	-	85.76	-
New York					
1/1/35 - 10/15/35	130	55.00	-	85.00	-
10/16/35 - 3/15/36	130	60.50	-	93.50	-
3/16/36 - 7/15/36	128	60.50	-	93.50	-
7/16/36 - 12/31/36	128	60.16	-	93.44	-

*County rates used only during period May - July 31, 1936.

Period	Hours Per Month	Amount Paid to Personnel		
		Unskilled	Skilled	Unskilled & Skilled
New Jersey				
8/1/35 - 10/30/35	130	\$55.00	-	\$55.00
5/16/36- 7/31/36	128	60.50	-	60.50
8/1/36 - 9/30/36	121	60.50	-	60.50
Pennsylvania				
8/16/35 - 11/15/35	130	44.00	-	63.00
11/16/35- 1/31/36	130	48.40	-	69.30
2/1/36 - 3/15/36	130	52.80	-	77.00
3/16/36- 7/31/36	128	52.80	60.50	77.00
8/1/36 - 12/31/36	105	52.80	60.50	70.00
11/15/36 - 12/31/36	96*	48.40*	55.00*	63.00

*Only in Counties of Bradford, Wyoming, Centre and Susquehanna.

Secretary-stenographer at Harrisburg Office - \$85 per month - maximum 120 hours per month.

Making Up of Lost Time by WPA Labor

During the first few months of the program considerable confusion existed as to whether or not it was necessary to make up credited time that had been lost due to inclement weather. Effective January 11, 1936, a record went on record as not requiring such lost time to be made up, but 3 states, New Hampshire, Massachusetts and Rhode Island, continued to require the making up of such lost time. A WPA regulation issued March 11, 1936 made it compulsory to make up lost time in all states. This procedure greatly complicated our record work, as it was necessary to determine for each payroll the amount of credited time and the amount of made up time. This condition continued until June 16, 1936, when instructions were issued that the WPA labor would only be paid for the time actually worked.

Transportation

Each district leader was provided with a Government car for his use in connection with his supervisory duties. Most of these automobiles were of the coach model type and were purchased prior to the WPA program. However, 15 sedan delivery machines were purchased from WPA money and assigned to some of the district leaders whose cars were no longer serviceable for long trips. Instead of turning in their old automobiles, the cars were assigned to some of the supervisors for their use. No Government trucks were purchased for transporting the WPA laborers, because of the seasonal nature of our project.

At the beginning of the program, the WPA procurement officer developed a contractual basis for the rental of trucks. However, the requirements regarding safety and other factors were so stringent that only two of these contracts were ever executed. Transportation facilities were, therefore, limited to those operated on a four cent per mile basis and to machines provided by towns.

trucks and 12 cars were used. The trucks were leased to the temporary force to provide transportation over the daily cost to the Government of \$30.00 per day, normally 50 cents per day. No complaints were received at the Cambridge Office from these workers who were not furnished transportation.

During the spring of 1936, an owner-operator basis was developed by the Cambridge Office. Under this procedure, the owner was paid not only for his personal services on the work but also for the use of his car. This method worked out very satisfactorily and was widely used during 1936.

Another procedure for the hire of trucks on a contractual basis was developed by the Cambridge Office in instances where the total payments under the agreement did not exceed \$300. Under this arrangement, contracts could be made without reference to the procurement officer. However, only a few contracts were made on this basis.

The entire cost to the Government for transporting security-wage workers up to December 31, 1936 amounted to only \$31,860.77. Table 4 lists the number of WPA laborers classified according to time consumed per day per employee in traveling to and from work on the blister rust control project in the Northeastern States.

All WPA workers on our project travel to and from work on their own time. Table 4 summarizes existing conditions by states. As indicated, 42 percent of the 4,289 workers rode to and from work at their own expense, 38 percent traveled in cars provided at Government expense, 19 percent used automobiles furnished by towns or counties, while only 1 percent walked. The time consumed in travel in the case of 41 percent of the total workers amounted to 30' or less per day per man, while 44 percent of the employees spent from 31' to 60' per day per man in travel. Only 15 percent used from 61' to 120' per day per man and only 20 percent of these workers, mostly in New York, rode at their own expense.

In Vermont, 90 percent of the 623 employees were transported at town or county expense; while in Massachusetts and New Hampshire, 50 and 10 percent, respectively, of the workers traveled in this manner. In New York, 83.6 percent of the 1,117 employees rode to work at their own expense; 572 of these required 30' or less per day per man for travel, 267 from 31' to 60', and 278 from 61' to 120'. Practically all members of the small force employed in New Jersey and Rhode Island traveled at their own expense, the time required being less than 1 hour per day per man. About half of the employees in Pennsylvania and Massachusetts also followed a similar procedure.

In Maine and Connecticut, 79 and 82 percent, respectively, of the workers rode in cars provided by the Government; while in New Hampshire and Pennsylvania, 50 and 49 percent, respectively, of the total number of men traveling in this manner amounted to 30' or less per day per man.

Table 4.—NUMBER OF R.P.A. LABORERS* CLASSIFIED ACCORDING TO TIME CONSUMED PER DAY PER EMPLOYEE IN TRAVELLING TO AND FROM WORK ON BLISTER "RUST CONTROL PROJECT IN NORTH ATLANTIC STATES"

State	30' or less per day per man			31' - 60' per day per man			61' to 120' per day per man			Total								
	Walked		Rode	Walked		Rode	Walked		Rode	Walked		Rode						
	Govt (1)	Own (2)		T or C (3)	Govt.		Own	T or C		Govt.	Own		T or C	Govt.	Own	T or C		
Mo.	9	188	103		317	34		55	1		9	1	560	79	138	20	0	0
W.	6	199	178	49	202	8	30	85			18	3	486	63	186	24	19	0
Co.			10		46	7	219				0	0	46		17	1	57	0
La.	1	8	112	98					5		1	0.4	8	5.1	117	36	11	30
P.			43		5						0	0	5	1.1	43	50	0	0
Conn.					70	9	6				0	0	70	82	9	11	6	
N. Y.	2		572		170	267	15		120		3	0.3	170	14.3	559	25.6	1	10
N. J.						10					0	0	0	0	0	10	0	0
Penn.			141		282	157					0	0	282	49	298	51	0	
Total	18	395	159	147	1092	492	270	0	140	126	377	31	1627					734

677

1957

525

(1)	Traveled in automobiles	provided by Government.
(2)	" "	at own expense.
(3)	" "	provided by towns or no

Aug 30 1936

Some of the most serious violations were reported to all the supervisory personnel in the various States. Considerable emphasis was placed on the application of the regulations and the inspection of the work sites by the PMA officials. Only a few inspections were ever made. The trucks and buses were not provided for the automobiles transporting WPA workers until November 1936, since the machines were not owned by the Government and the cars were parked off the roads. At Mr. Patton's suggestion, such equipment was purchased and used during the winter of 1936.

Injuries and Compensation to WPA Workers

During the period July 29, 1935 to December 31, 1936, a total of 8,116 workers were employed for 3,884,593 man hours. In spite of the large force used, only 113 injuries were sustained. Only one death occurred and this was from a fall which resulted from a trap being forced into the ear. Another laborer was in a serious condition as a result of being accidentally shot by a fellow worker. One-third of all alleged injuries was due to poisoning chiefly from arsenic. About 32% of the injuries represented sprains and bruises chiefly to arms, legs and back. Only one of the sprains was of a serious nature. Of the 10 organic injuries, 4 represented injury to eyes, but there was no case where vision was lost. Only 3 cases of fracture were reported. A total of 50 cases of infection occurred due chiefly to thorns being forced into various parts of the body, mostly the hands and fingers, but only in one instance was the consequence serious. Only one automobile accident involving injuries to employees was recorded. The leg of one of the workers riding in a state car was broken.

Table 5.-Personnel Employed and Classification of Alleged Injuries Sustained On WPA Blister Rust Control Project in Northeastern States July 1935 to December 31, 1936, Incl.

State	Total No. Men Employed	Total Man Hours	No. Alleged Injuries by Classes						Total Injuries
			Poison Ivy	Infections	Blood Poisoning	Fractures	Sprains and Bruises	Organic	
Maine	1,359	680,111	9	5	1	-	7	3	25
N.H.	1,599	672,871	15	5	-	-	24	8	52
Vt.	1,218	445,616	25	25	1	3	29	17	100
Mass.	605	329,909	15	3	-	1	13	11	43
N.I.	107	54,205	-	-	-	1	2	-	3
Conn.	221	104,208	2	1	1	-	-	1	5
N.Y.	1,986	1,087,529	35	7	-	1	23	14	80
N.J.	23	9,034	-	-	-	-	-	-	0
Pa.	998	501,110	12	4	-	2	10	6	34
Totals	8,116	3,884,593	113	50	3	8	108	60	342
Percentage of total injuries			33.0	14.6	.9	2.3	31.6	17.6	100

Table 6.-Summary of Accrued Compensation Payable to Men Employed on Blister Rust Control Work in Northeastern States (July 23, 1935 to March 15, 1937)

State	No. Men Paid Compensation	Total Amount Paid	Ave. Amount Paid Per Case
Maine	9	\$ 44.99	\$ 5.00
New Hampshire	8	41.68	5.21
Vermont	14	264.99	18.92
Massachusetts	2	15.84	7.92
Rhode Island	1	165.00	165.00
Connecticut	1	6.67	6.67
New York	11	359.17	32.65
New Jersey	0	0	0
Pennsylvania	3	338.33	112.77
Totals	49	\$1,236.67	\$ 25.24

No records are available from the Compensation Commission as to the cost for care of the injured workers.

Activities of the Regional Office

(Especially as related to the WPA Program)

Duties

Prior to the advent of the emergency programs, the personnel of the Regional Office was limited to the senior pathologist, an assistant and a secretary-stenographer. The activities were confined chiefly to general supervision of blister rust control in the Northeastern States. The office work consisted of the preparation of budgets and plans of work, summarization and analysis of field data and accomplishments, and the preparation of weekly and monthly personnel and progress reports. In addition, annual reports were prepared summarizing the results accomplished under each project in each of the States of the Northeastern Region. Property records were also kept at the Regional Office. The federal personnel in the Northeastern States consisted merely of a state leader in each of the nine states and a total of 29 district leaders. The payrolls, expense accounts and 1034 forms for these men were handled at the Washington Office.

During the FWA program several hundred laborers were employed on federal funds in addition to the appointed men. The time sheets for the laborers were sent to the Washington Office where the payrolls were prepared and submitted for payment. The same applies to expense accounts and 1034 forms. However, under the WPA program, which began July 29, 1935, practically all office work in connection with this program was assigned to the Regional Office. The office work consisted of the following items:

Preparation of budgets, plans, contracts, and schedules of work; preparation of payrolls for a maximum of 4,457 men; auditing of expense accounts for a maximum of 116 appointed men and a maximum of 75 laborers operating personally-owned machines on a four cent per mile basis; auditing all 1034 vouchers for contractual items, purchase of supplies and equipment for the entire region or arranging for such purchases through the procurement official; administrative record work in connection with all compensation cases; issuance of instructions to field personnel; and reports (weekly personnel, semi-monthly personnel and financial, monthly progress report of field activities, monthly news item, and fiscal and calendar year reports).

Personnel

At the beginning of the WPA program considerable difficulty was experienced in getting a clerical force for the Regional Office, due to the fact that the employees were taken from relief rolls and the desired number could not readily be obtained by the local employment office. During the first half of August, it was possible to secure only three workers. This number was increased to 10 during the latter half of August and to 12 during the latter half of September. The force was continued on this basis from that time until April 30, 1936, and consisted of 4 clerks, 3 stenographers, 3 typists and 2 office boys. During the period May 1, 1936 to October 3, 1936, the office force was increased to 22 workers, consisting of 8 clerks, 10 typists, 2 stenographers and 2 office boys. This increase in force was made in order to expedite payment of salaries and expenses and because the field force had been increased to about 4,500 workers. The office force during the field season of 1936 was divided into two shifts, one from 8 a.m. to 3 p.m. and the other from 3 p.m. to 10.15 p.m. This arrangement was necessary due to the limited space available and to prevent the purchase of considerable extra equipment which would have been essential if only one shift had been employed. The double-shift arrangement was used only for about a week after the ending of each payroll period. During the remainder of the time the services of the workers were staggered and they functioned on a one-shift per day basis. Mr. Cheyne took charge of the night shift, while Mr. Stimson directed the work during the day. The senior pathologist and his secretary worked the usual hours from 9 a.m. to 4.30 p.m. Frequently, however, the senior pathologist found it necessary to work a part or all of both shifts. In fact, in order to accomplish the desired results, it was often necessary for all the four regular employees to work overtime during the rush season.

The WPA personnel at the Cambridge Office was taken entirely from relief rolls and was for the most part inexperienced in the type of work demanded. We were fortunate in securing good clerks and fair typists, but had extreme difficulty in obtaining effective stenographers.

A total of 32 security-wage workers were employed at the Cambridge Office during the period August 1, 1935 to December 31, 1936. Five of these persons resigned to accept private employment, one resigned to be married, five were discharged because of inefficiency, eleven discharged because of curtailment in field work, and ten are still employed. A total of 10 of the 32 workers were promoted to a higher rating during their service at the Cambridge Office. No politics was evident in the selection of personnel, and promotions were based entirely on the efficiency record of those concerned.

Payroll Procedure

Up to December 31, 1936, a total of 2,952 WPA payrolls had been prepared at the Cambridge Office and transmitted to the Treasury Accounts Office for payment. Payrolls were prepared on a semi-monthly basis and usually two payrolls, one for relief and another for non-relief employees, covered the services of all WPA laborers employed under the direction of a district leader.

The time sheets for the WPA laborers were submitted by the district leaders semi-monthly direct to the Cambridge Office. The payrolls were prepared there from these time sheets, usually the first day they were received, and sent by messenger to the Treasury Accounts Office at Boston. During 1935 the checks were mailed to the Cambridge Office where they were grouped by districts and sent by registered special delivery mail to the district leaders for distribution to the field workers. This procedure was continued until June 30, 1936, except that beginning May 1 our messenger called for the checks at the Accounting Office in order to expedite delivery. During the first part of July a new arrangement was initiated in the distribution of checks whereby each check was mailed by the Cambridge Office direct to the individual concerned, the envelopes being addressed in advance of receipt of the checks. This plan speeded up the delivery of checks by at least a day. A few checks were reported as lost, but the number was insignificant. The interval between the dates the payrolls were submitted to the Treasury Accounts Office and the dates the checks were received at our Cambridge Office averaged 4.5 days for 2,952 payrolls. See following table.

Table 7.-Tabulation Showing Time Involved from Date Voucher Transmitted To Treasury Accounts Office to Date Checks Were Received at This Office - Period July 29, 1935 to December 31, 1936

<u>Days Involved</u>	<u>Number of Vouchers</u>	<u>Percent</u>
1	39	1.3
2	250	8.5
3	634	21.5
4	743	25.2
5	531	18.0
6	384	13.0
7	225	7.6
8	101	3.4
9	25	.8
10	6	.3
11	3	.1
12	4	.1
13	2	.1
14	1	.0
15	-	-
16	-	-
17	-	-
18	-	-
19	-	-
20	2	.1
	2,952	100.0

During the first few months of the program, the Accounting Office insisted upon incorporating in the payrolls such detailed data which did not appear to be necessary. One of the main requirements was that we designate, according to 24 classes, the reason why an employee did not work full time. I objected strenuously to such a procedure and refused to comply with it unless I received a letter from the accountant-in-charge stating he would not pass the payrolls otherwise. No such letter was sent to me and finally the requirement was waived.

Payroll Encumbrances

During the period July 29, 1935 to January 31, 1936, the Treasury Department required the establishment of an advance encumbrance for each payroll. This method entailed a large amount of clerical work. As a result of persistent effort on our part, the system was changed February 1, 1936 to allow our office to set up an advance encumbrance covering the total estimated amount to be obligated by each official project for each payroll period. This procedure greatly simplified this phase of the work.

Considerable difficulty has been encountered in securing prompt cancellation of unobligated encumbrances. In order to make available for re-encumbrance any unobligated balances, it is necessary for this office to issue Form A-5A, notice of cancellation of encumbrance. In many instances, it has required three or four months before final approval and release of these unobligated balances could be obtained from the Treasury Accounts Office. This condition has complicated our record-keeping and made it difficult to determine the exact status of funds.

Procurement Procedure

During the first few weeks of the WPA program, it was necessary to obtain all equipment and supplies on requisition through the Procurement Division of the Treasury Department. The length of time involved in this procedure was so great, it decidedly handicapped field activities. On August 29, 1935, authority was granted to issue requisitions and purchase supplies under competition without reference to the Procurement Division where the cost involved did not exceed \$300. This procedure greatly facilitated delivery allowing the program to go forward with more speed and efficiency.

In making purchases of small supplies and equipment in the field we were handicapped until the latter part of February, 1936, because such items had to be obtained either through the Procurement Officer or secured through the Cambridge Office under the \$300 exemption. The Accounting Office refused to permit the inclusion of such items in the monthly expense account on Form 1012, as had been the practice under the regular program. However, they finally agreed under emergency conditions to permit the field men to make such small purchases and to claim reimbursement in their monthly expense accounts.

At the start of the WPA program, the Procurement Officer insisted that we obtain contracts for all automobile storage, maintenance and repairs to the Government machines and telephone service. The accounts payable under these contracts were certified at the Cambridge Office and transmitted to the Procurement Division of the Treasury Department. During the period November 4, 1935 to June 5, 1936, a total of 113 vouchers were submitted to the Procurement Officer. There was on the average a delay of 125 days between the dates

the vouchers were submitted and the dates payments were made. The delay in payments was vigorously protested by letter and in personal interviews with the Procurement Officer. In each instance, promises were received that the matter would be given prompt attention and a few vouchers would be paid.

During a conference with the Procurement Officer in June 1936, he admitted that he had made a mistake in insisting upon contracts and having the vouchers sent through his office. He agreed to terminate all contracts June 30 and arrangements were made whereby all vouchers covering such items could be sent direct to the Accounting Office of the Treasury Department. This arrangement has greatly facilitated prompt payment of vouchers, as evidenced by the fact that the next 162 vouchers of this type, that were submitted up to October 21, 1936, were paid in an average of 11½ days as against 123 under the old procedure. New contracts were made by the Cambridge Office to cover automobile storage and telephone service during the fiscal year 1937. No contracts were provided for automobile repairs and maintenance.

Expense Accounts (Form 1012)

During the first few weeks of the WPA program, the auditing of expense accounts at the Cambridge Office was handicapped by lack of personnel and the inexperience of the workers. Special effort was made to submit the payrolls promptly; and in consequence, action on the expense accounts was delayed. This situation was, however, gradually remedied with the result that for the past 15 months such accounts have moved rapidly through the Cambridge Office and have been promptly audited and paid by the Accounting Office. We were also handicapped for several weeks during the beginning of the program in getting vouchers through the Accounting Office because of their insistence on certain procedures entirely different from any that had been used in the past. Some of the differences in regulations governing the auditing of accounts under the WPA program, as compared with the regular procedure, were as follows:

1. Duplicate receipts required.
2. Required to attach sub-letter of authority or letter of authorization to each 1012 voucher. If the employee was away from his headquarters at the beginning of the travel period, it is also necessary to attach a copy of the previous month's sub-letter of authority.
3. Certification required on telephone bills in addition to certification on 1034 forms.
4. Certificate of identification required for minor difference in name of payee.
5. Speedometer readings required for travel statements during the first few months of the program, even though at that time not compulsory on regular work.
6. Necessary to indicate on face of voucher the exact dates of the travel period, rather than to show the account as covering all items from the 1st to 31st of the month.
7. Forms 1036 required for each day that service is indicated on 1034 voucher; also confirming purchase orders, rather than a single 1036 and one purchase order to cover all items of service.

Extra copies of purchase orders required, but these have been held at the Cambridge Office due to lack of information as to their distribution. Instructions state that 7 copies of purchase orders should be prepared but the Accounting Office has been unable to give any information as to the disposition of the additional copies.

A total of 5,187 expense accounts and 1034 vouchers had been audited at the Cambridge Office up to December 31, 1936, and 3,157 of these accounts have been paid.

WPA Forms

It appears that the WPA stock room at Boston is not supposed to supply forms to projects operated by federal activities. Since we were unable to secure any of the required forms from Washington, our needs have been met under protest by this local stock room. We used the payrolls forms supplied by the WPA, but prepared our own time sheets.

During the first few weeks of the program, the various WPA requisition and assignment forms were not available. This condition caused considerable confusion; but in spite of it, satisfactory arrangements were promptly made for putting relief labor to work on our project. The success in this respect was due chiefly to the initiative and strenuous efforts of the district leaders.

Accomplishments in Blister Rust Control Under The WPA Program Northeastern States - July 29, 1935 to Dec. 31, 1936

Ribes Eradication

Ribes eradication was the major activity performed on the blister rust control project under the WPA program in 75 counties of the Northeastern States. In fact, nearly 87 percent of the total man days was used on such work, which was conducted during July-October, 1935, and May-September, 1936, in each of the Northeastern States, except Pennsylvania and New York where a small amount of Ribes eradication was also performed during October 1936. A total of 1,598,139 acres, practically all on individually-owned lands, were cleared of 52,594,544 wild Ribes and 68,364 cultivated bushes as a result of 404,426 eight-hour men days of work.

During 1935 the WPA Ribes eradication crew consisted of seven unskilled laborers and a skilled worker (foreman). On the regular program the standard crew was composed of five laborers and a foreman, while on the PWA program the 13-man crew comprised 10 laborers, 2 strawbosses and a foreman. These larger size crews were used to reduce overhead costs and to provide qualified men for foremen. The PWA crew usually functioned in two units each directed by a strawboss, the foreman apportioning his time between the units. This arrangement did not prove very satisfactory; therefore, under the WPA program, the crew was reduced to eight men working as a single unit. In sections where the Ribes were abundant, this arrangement was practicable; but in areas where the crew was widely spread in scout formation, seven men in line proved to be unwieldy. Consequently during 1936, many of the WPA crews operated as six-man units, especially in Maine and southern New England.

It was also important to have a foreman with some WPA eradication experience at all times, since only about 10 percent of the men employed during 1935 had previous experience in blister rust control, and also the relief labor comprising at least 90 percent of the total personnel was not usually as reliable and capable as the selected men used on the regular program. This condition as regards the WPA labor made it advisable, when possible, to select control areas necessitating crew work in strip formation, rather than sections where the Ribes could be located and eradicated by scouting methods. In fact, no individual WPA scouts were employed on the program. Such an arrangement resulted in the destruction of numerous Ribes concentrations, but was an important factor in restricting the amount of acreage worked. Numerous checks made on the project indicated the quality of the work was in most instances satisfactory, but the quantity was in general considerably below that obtained with a corresponding number of men on the regular program. (See graph on page 26.)

Table 8.-Distribution of Work and Personnel Employed on WPA Ribes Eradication Projects in Northeastern States During 1935 and 1936

(August 1 to October 31, 1935 - May 1 to September 30, 1936)

State	No. Counties in which Work Performed	No. Towns Where Work Performed		Personnel Employed					
				No. Security Wage Workers		No. Supervisors			
				Maximum No.	Ave. No.				
		1935	1936	1935	1936	1935	1936	1935	1936
Maine	14	45	73	582	722	536	652	10	15
N. H.	10	57	96	535	878	407	762	10	18
Vt.	8	14	23	277	624	218	547	7	11
Mass.	6	18	40	249	322	231	280	4	5
R. I.	1	1	3	49	64	46	55	-	-
Conn.	3	10	15	113	92	109	87	2	2
N. Y.	26	58	147	871	1,160	756	1,101	13	18
N. J.	3	4	3	13	10	11	6	1	1
Pa.	4	21	41	474	620	438	550	8	15
All States	75	228	441	3,163	4,492	2,752	4,040	55	85

Table 9. - Summary of Ribes eradication work by State and Year, 1935 to 1936 (Excludes nursery establishment and collected plant material)

Initial Control Work

State	Year	Acreage		Ribes Pulled		Total Man Days	Local Coop.	State	W.P.A.	Total	Cost	Per Acre
		Total Worked	Pine Protected	Wild	Cult.							
Maine	1935	73,173	30,032	2,699,427	1,633	16,891	136.87	85.41	57,615.96	57,838.24	790	50
	1936	109,504	39,107	7,264,562	2,761	26,201	-	-	96,835.95	96,835.95	864	65
	Total	182,677	69,139	9,963,989	4,394	43,092	136.87	85.41	154,452.91	154,675.19	847	54
	1935	44,308	22,700	1,137,133	372	9,447	170.10	-	34,260.94	34,431.04	777	25
N. H.	1936	123,442	62,200	5,564,894	4,360	27,583	53.00	134.15	91,597.57	91,784.72	744	45
	Total	167,750	84,900	6,702,027	4,732	37,030	223.10	134.15	125,558.51	126,215.76	752	60
	1935	14,738	4,644	241,726	57	4,561	543.00	149.58	12,614.93	13,307.51	900	15
	1936	78,095	19,175	2,579,728	1,852	28,833	7310.75	-	86,345.52	93,656.27	1,200	35
Vt.	Total	92,833	23,819	2,821,454	1,909	33,399	7854.75	149.58	98,960.45	106,963.78	1,115	29
	1935	25,559	10,132	270,365	13,091	4,279	1187.40	-	14,532.19	15,719.59	615	10
	1936	50,725	22,690	593,630	850	7,005	1095.97	432.28	29,034.66	30,562.91	602	11
	Total	76,284	32,822	863,995	13,941	11,284	2283.37	432.28	43,566.85	46,282.50	606	11
P. I.	1935	-	-	-	-	-	-	-	-	-	-	-
	1936	4,199	1,400	4,087	443	726	-	-	2,933.48	2,933.48	629	11
	Total	4,199	1,400	4,087	443	726	-	-	2,933.48	2,933.48	699	10
	1935	-	-	-	-	-	-	-	-	-	-	-
Conn.	1936	16,227	1,855	87,906	2,138	2,287	-	22.94	3,944.53	8,967.47	553	5
	Total	16,227	1,855	87,906	2,138	2,287	-	22.94	3,944.53	8,967.47	553	5
	1935	81,915	54,630	2,265,878	1,697	27,295	-	11,034.80	102,046.55	113,081.35	1,338	27
	1936	269,949	179,956	9,039,212	12,978	72,521	-	22,359.92	278,283.07	300,642.29	1,111	37
N. Y.	Total	351,864	234,586	11,305,090	14,675	99,817	-	33,394.72	380,329.62	413,724.34	1,118	32
	1935	1,060	457	14,332	100	456	-	-	1,869.33	1,869.33	1,76	13
	1936	2,555	470	6,795	199	495	-	298.10	1,992.97	2,291.07	893	20
	Total	3,625	927	21,127	299	951	-	298.10	3,862.30	4,160.40	1,115	50
Penna.	1935	22,925	5,302	2,831,765	2,442	14,648	-	-	43,159.03	43,159.03	1,88	123
	1936	72,709	14,006	4,710,395	5,262	30,383	-	-	119,230.77	119,230.77	1,84	64
	Total	95,634	19,308	7,542,160	7,704	45,031	-	-	162,389.80	162,389.80	1,70	78
	1935	263,758	127,897	9,460,626	19,392	77,578	2037.37	11,269.19	266,098.93	279,406.09	1,06	35
All States	1936	727,485	340,869	29,901,209	30,843	196,039	8459.72	23,247.39	715,199.52	746,906.63	1,03	41
	Total	991,243	468,766	39,361,835	50,235	273,617	10497.09	34,517.18	981,298.45	1,026,312.72	1,04	39

Note: The cost figures are based on the total cost of laborers and foremen employed in locating and pulling Ribes; transportation of crews and miscellaneous expenses for trail paper, picks, etc. Cost of supervisors is not included in above expenditures for Ribes eradication.

Table 10.--Summary of Ribes Eradication Work Performed Under W.P.A. Program in Northeastern States During 1935 and 1936. -- (Excludes Nursery Sanitation and Cultivated Black Currant Elimination.)

Re-Eradication Work

State	Year	Acreage		Ribes Pulled		Total Man Days	Cost			Total	Per Acre	
		Total Worked	Pine Protected	Wild	Cult.		Local Coop.	State	W.P.A.		Cost	Ribes
Maine	1935	28,584	14,968	582,502	327	6,790	192.20	43.07	23,169.18	23,404.45	.819	20.4
	1936	125,776	53,540	3,269,096	6,798	21,705	265.32	-	81,811.14	82,076.46	.653	26.0
	Total	154,360	68,508	3,851,598	7,125	28,495	457.52	43.07	104,980.32	105,480.91	.682	25.0
N. H.	1935	34,137	17,250	848,325	149	7,556	133.65	-	26,179.53	26,313.18	.771	24.5
	1936	135,654	68,400	2,945,481	1,126	25,195	978.00	123.83	83,676.27	84,778.10	.625	21.7
	Total	169,791	85,650	3,793,806	1,275	32,751	1,111.65	123.83	109,855.80	111,091.28	.654	22.8
Vt.	1935	17,556	6,704	138,689	25	3,951	450.00	131.26	13,050.47	13,631.73	.776	7.0
	1936	25,701	7,040	678,745	469	3,289	1408.00	-	24,916.51	26,324.51	1.02	24.4
	Total	43,257	13,744	817,434	494	12,240	1858.00	151.26	37,966.98	39,956.24	.924	10.3
Mass.	1935	29,298	14,762	395,197	1,275	5,951	1417.70	-	23,236.25	24,653.95	.841	17.0
	1936	62,373	30,923	1,046,901	2,633	12,955	3108.83	152.94	52,254.81	56,876.58	.912	10.0
	Total	91,671	45,685	1,442,198	3,908	18,906	4526.53	152.94	75,491.06	81,530.53	.889	15.7
N. J.	1935	8,695	2,398	10,962	893	2,036	-	209.25	7,394.63	7,603.88	.875	1.8
	1936	23,947	7,982	26,214	1,212	3,430	-	85.48	13,098.46	13,183.94	.551	1.1
	Total	32,642	10,380	37,176	2,110	5,466	-	294.73	20,493.09	20,787.82	.637	1.1
Conn.	1935	20,670	2,354	212,196	639	4,773	-	-	17,665.91	17,665.91	.855	10.3
	1936	10,344	1,382	198,383	267	4,202	176.00	42.59	16,920.93	17,139.52	1.06	10.1
	Total	31,014	3,736	410,579	906	8,975	176.00	42.59	34,586.84	34,805.43	1.12	11.3
N. Y.	1935	17,945	11,964	357,229	279	4,461	-	2501.33	16,612.23	19,113.56	1.07	10.9
	1936	52,271	34,848	1,510,794	2,124	12,569	-	2238.45	49,412.44	51,650.39	.982	20.3
	Total	70,216	46,812	1,868,023	2403	17,029	-	4739.78	66,024.67	70,764.45	1.01	21.2
Del.	1935	-	-	-	-	-	-	-	-	-	-	-
	1936	13,945	3,846	1,011,935	508	6,947	-	-	25,656.34	25,656.34	1.84	72.0
	Total	13,945	3,846	1,011,935	508	6,947	-	-	25,656.34	25,656.34	1.84	72.0
Md.	1935	156,835	70,900	2,545,100	3,592	35,518	2193.55	2884.91	127,308.20	132,306.60	.844	11.8
	1936	450,011	207,961	10,687,609	15,137	95,291	5936.15	4003.29	547,746.80	557,683.54	.793	25.7
	Total	606,846	278,861	13,232,709	18,729	130,809	8129.70	6088.20	475,055.10	490,073.00	.805	23.8

Note: The cost figures are based on the total cost of laborers and foremen employed in locating and pulling Ribes; transportation of crews and miscellaneous expenses for trail paper, picks, etc. Cost of W.P.A. supervisors is not included in above expenditures for Ribes eradication.

Table 11.—Summary of Ribes Eradication Work Performed Under W.P.A. Program in Northeastern States During 1935 and 1936. (Excludes Nursery Sanitation and Cultivated Black Currant Elimination.)

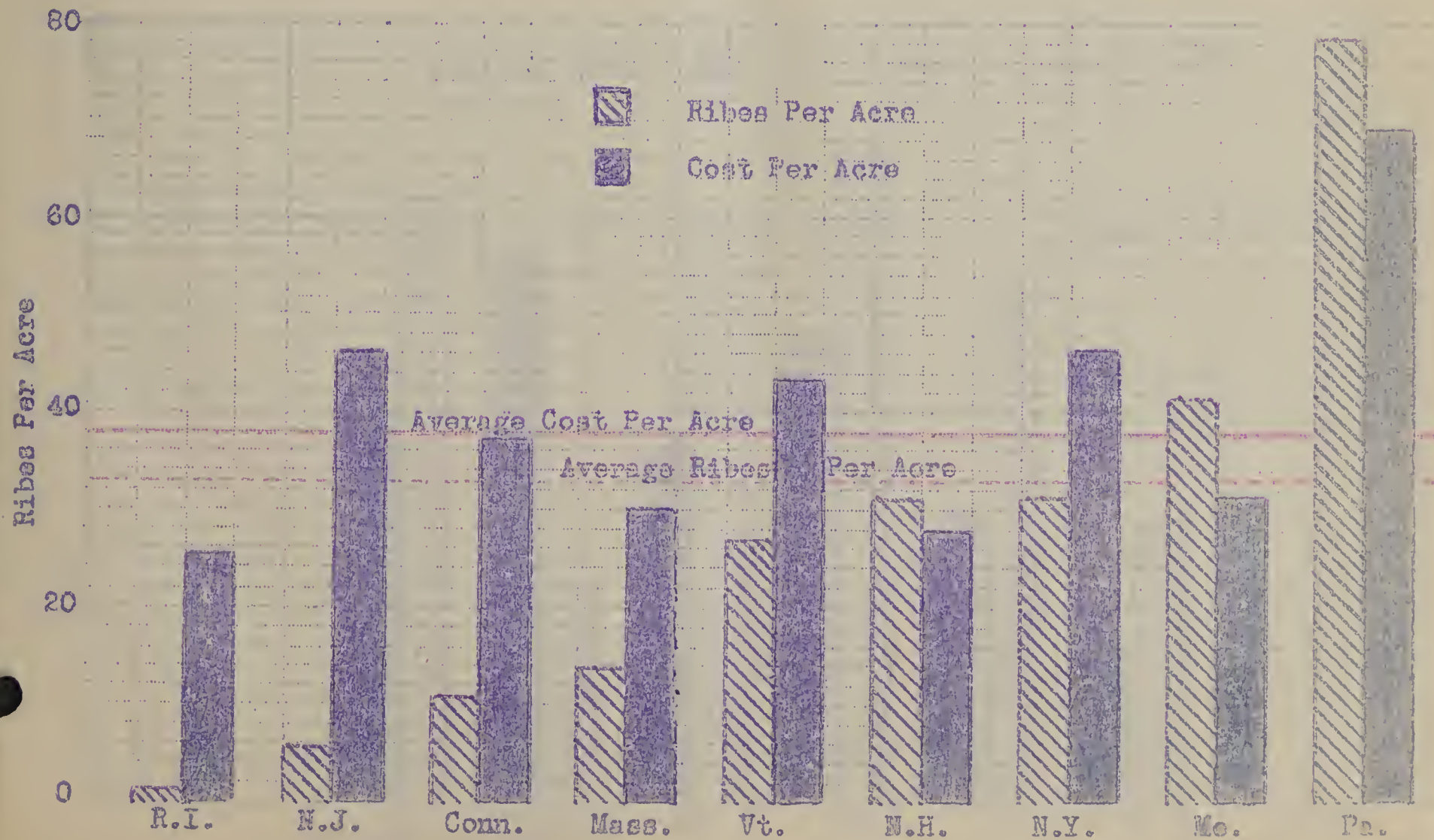
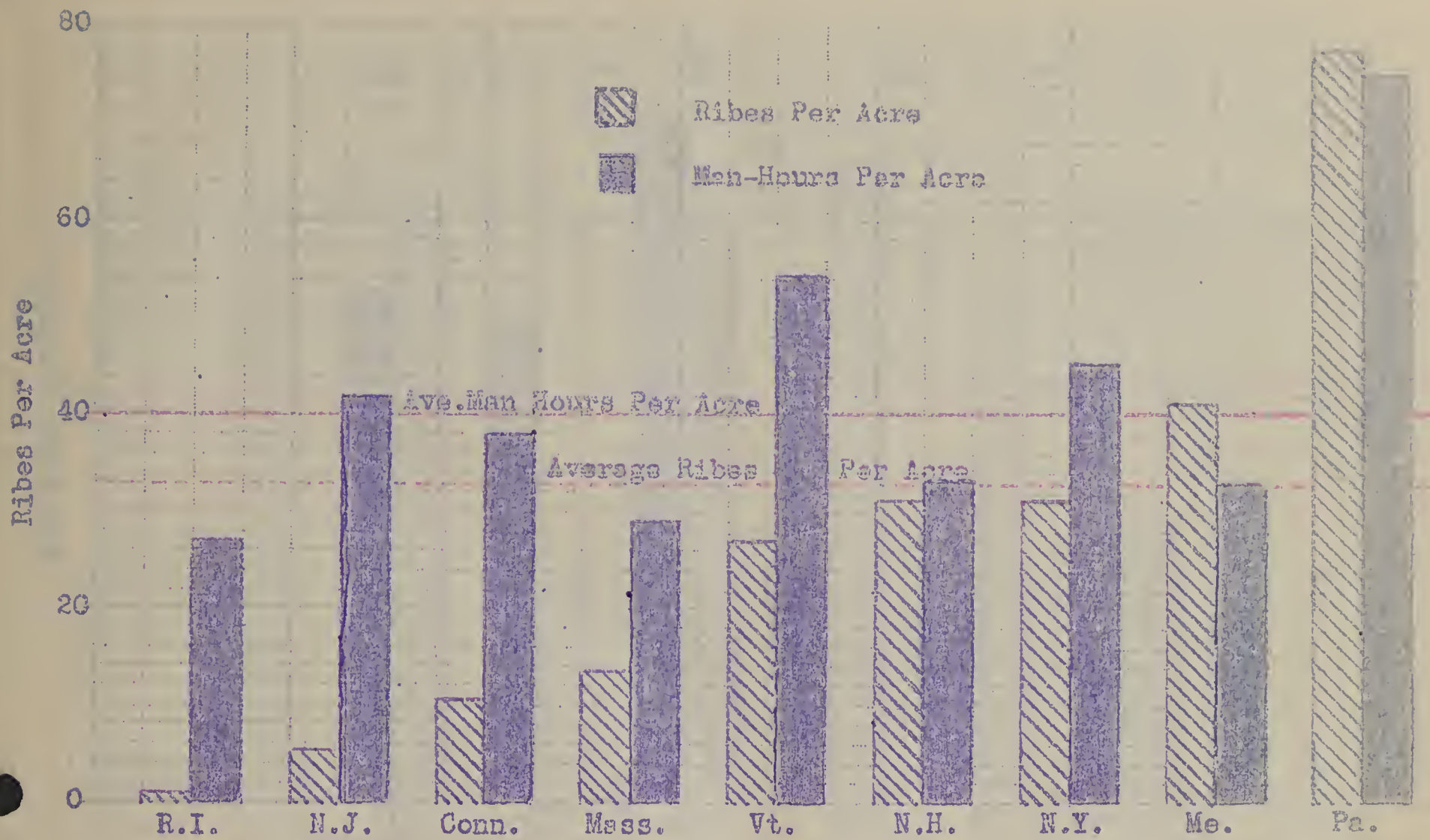
Initial and Re-Eradication

State	Year	Acreage		Ribes Pulled		Total Man Days	Local Coop.	State	Cost	W.P.A.	Total	Cost	Ribes	Per Acre
		Total Worked	Pine Protected	Wild.	Cult.									
Maine	1935	101,757	45,000	3,281,929	1960	23,681	329.07	128.48	80,785.14	81,242.69	.798	32.3	.33	
	1936	235,280	92,647	10,533,658	9559	47,906	265.32	-	178,648.09	178,913.41	.760	44.8	.20	
	Total	337,037	137,647	13,815,587	11,519	71,587	594.39	128.48	259,433.23	260,156.10	.772	41.0	.21	
N. H.	1935	78,445	39,950	1,985,458	521	17,003	303.75	-	60,440.47	60,744.22	.774	25.5	.22	
	1936	259,096	130,600	8,510,375	5486	52,778	1031.00	257.98	175,273.84	176,562.82	.681	32.8	.10	
	Total	337,541	170,550	10,495,833	6007	69,781	1334.75	257.98	235,714.31	237,307.04	.703	31.1	.31	
Vt.	1935	32,344	11,348	380,415	82	8,512	993.00	280.84	25,665.40	26,939.24	.833	11.8	.20	
	1936	103,796	26,215	3,258,473	2321	37,127	8718.75	-	111,262.03	119,980.78	1.16	31.4	.31	
	Total	136,140	37,563	3,638,888	2403	45,639	9711.75	280.84	136,927.43	146,920.02	1.08	26.7	.51	
Mass.	1935	54,857	24,894	665,562	14,366	10,230	2605.10	-	57,768.44	40,373.54	.736	12.1	.30	
	1936	113,168	53,613	1,640,591	3483	19,960	4204.80	1945.22	81,289.47	87,439.49	.773	14.5	.20	
	Total	168,025	78,507	2,306,153	17,849	30,190	6809.90	1945.22	119,057.91	127,813.03	.761	13.7	.50	
R. I.	1935	8,695	2,898	10,962	898	2,036	-	209.25	7,394.63	7,603.88	.875	1.3	.30	
	1936	28,146	9,382	30,301	1,655	4,156	-	85.48	16,031.94	16,117.42	.573	1.1	.13	
	Total	36,841	12,280	41,263	2,553	6,192	-	294.73	23,426.57	23,721.30	.644	1.1	.43	
Conn.	1935	20,670	2,354	212,196	639	4,773	-	-	17,665.91	17,665.91	.855	10.3	.32	
	1936	26,571	3,237	286,289	2,405	6,489	176.00	65.53	25,865.46	26,106.99	.983	10.8	.22	
	Total	47,241	5,591	498,485	3,044	11,262	176.00	65.53	43,531.37	43,772.90	.927	10.6	.54	
N. Y.	1935	99,890	66,594	2,623,107	1,976	31,757	-	13,536.13	118,658.78	132,194.91	1.32	26.5	.33	
	1936	322,220	214,814	10,600,006	15,102	85,089	-	24,598.37	327,695.51	352,293.88	1.09	32.9	.36	
	Total	422,110	281,408	13,223,113	17,078	116,846	-	38,134.50	446,354.29	484,488.79	1.15	31.3	.69	
N. J.	1935	1,060	457	14,332	100	456	-	-	1,869.33	1,869.33	1.76	13.5	.41	
	1936	2,565	470	6,795	199	495	-	298.10	1,992.97	2,291.07	.893	2.6	.19	
	Total	3,625	927	21,127	299	951	-	298.10	3,862.30	4,160.40	1.15	5.8	.60	
Penna.	1935	22,925	5,302	2,831,765	2,442	14,648	-	-	43,159.03	43,159.03	1.88	123.5	.63	
	1936	86,654	17,852	5,722,330	5,770	37,330	-	-	144,887.11	144,887.11	1.67	66.0	.43	
	Total	109,579	23,154	8,554,095	8,212	51,978	-	-	188,046.14	188,046.14	1.72	78.1	.89	
Totals	1935	420,643	198,797	12,005,726	22,984	113,096	4230.92	14,154.70	393,407.13	411,792.75	.979	28.5	.89	
	1936	1,177,496	548,830	40,588,818	45,980	291,330	14,395.87	27,250.68	1,062,946.42	1,104,592.97	.938	34.5	.83	
Grand Total	1935													
Total	& 36	1,598,139	747,627	52,594,544	68,964	404,426	18,626.79	41,405.38	1,456,353.55	1,516,385.72	.949	32.9	.85	

Note: The cost figures are based on the total cost of laborers and foremen employed in locating and pulling Ribes; transportation of crews and miscellaneous expenses for trail paper, picks, etc. Cost of W.P.A. supervisors is not included in above expenditures for Ribes eradication.

COMPARISON BY STATES OF PER ACRE VALUES FOR RIBES BRADICATION WORK

WFA PROGRAM - NORTHEASTERN STATES - 1965-1982



COMPARISON OF PROGRAMS OF RIBES AND MAN HOURS FOR RIBES ERADICATION WORK
SOUTHEASTERN STATES - 1939-1956, INCLUSIVE

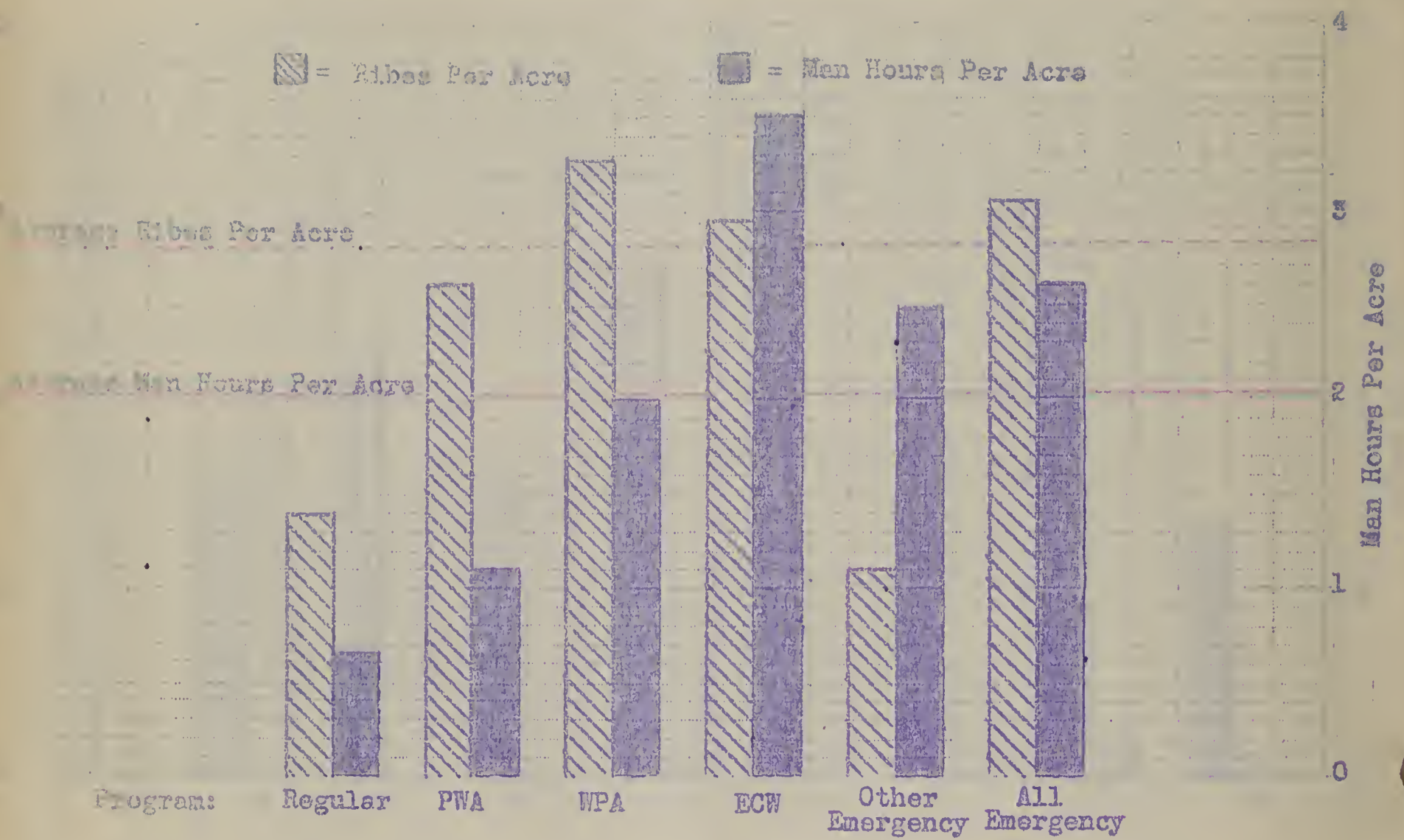


Table 12.-Supervision of Ribes Eradication Performed Under W.P.A. Program
in Northeastern States During 1935 and 1936.

State	Year	No. WPA Supervisors	Man Days Worked by WPA Supervisors	Cost of Supervisors			
				State	B. E. P. Q.	W. P. A.	Total
Maine	1935	10	788	362.00	-	5,088.60	5,450.60
	1936	15	2,477	128.00	-	14,825.78	14,953.78
N. H.	1935	10	627	-	-	4,104.95	4,104.95
	1936	18	2,227	1,583.50	-	14,596.10	16,179.60
Vt.	1935	7	535	120.06	-	3,424.52	3,544.58
	1936	11	1,680	-	-	8,946.50	8,946.50
Mass.	1935	4	318	-	-	2,034.50	2,034.50
	1936	5	806	-	-	4,198.62	4,198.62
R. I.	1935	-	-	-	-	-	-
	1936	-	-	-	-	-	-
Conn.	1935	2	116	-	-	894.60	894.60
	1936	2	313	129.95	270.00	1,488.55	1,888.50
N. Y.	1935	13	1,015	462.24	-	6,337.35	6,799.59
	1936	18	2,831	3,986.52	-	15,421.98	19,408.50
N. J.	1935	1	84	37.21	-	435.25	472.46
	1936	1	105	-	-	556.00	556.00
Penna.	1935	8	577	-	-	2,967.20	2,967.20
	1936	15	2,238	-	-	12,986.03	12,986.03
Total	1935	55	4,060	981.51	-	25,286.97	26,268.48
	1936	85	12,677	5,827.97	270.00	73,019.56	79,117.53

Pine and Control Area Mapping

During the period from November 1, 1935 to April 30, 1936 and from October 1 to December 31, 1936, the major project under the WPA program in all the Northeastern States was pine and control area mapping. Such pre-eradication surveys are an essential part of blister rust control and an important factor in reducing the cost of Ribes eradication. Such mapping not only locates the pine areas, but definitely defines the limits of the necessary protection zones, thus reducing costs by avoiding excessive protection zone area. With such maps the crew foremen can readily locate control area boundaries in the field and consequently limit their activities chiefly to crew supervision. The maps will also be of considerable assistance in determining the need for reworkings. This survey resulted in the mapping of 2,740,627 acres for control work and the examination and elimination from protection of an additional 2,563,356 acres. In Pennsylvania, several hundred thousand additional acres were eliminated, but no definite record was kept. The detailed accomplishments in each state are given in Table 13.

Table 13.- Summary of Pine and Control Area Mapping under Federal WPA Program In Northeastern States during 1935 and 1936

Federal Program

State	Year	No. Towns	Acreage Mapped	Acreage Examined but not Mapped	Miles Boundary Lines Painted	Total Man Days	Cost				
							Towns	State	BE&PQ	WPA	Total
Maine	1935	22	94,070	178,972	329	2,290	-	688.45	-	9,414.39	10,102.84
	1936	103	522,343	1,081,040	1,312	6,876	-	1,513.39	-	29,153.26	30,666.65
	Total	-	616,413	1,260,012	1,641	9,166	-	2,201.84	-	38,567.65	40,769.49
N.H.	1935	31	53,059	-	-	1,725	-	-	-	8,470.74	8,470.74
	1936	80	302,873	48,486	-	5,659	-	18.32	-	28,151.92	28,170.24
	Total	-	355,932	48,486	-	7,384	-	18.32	-	36,622.66	36,640.98
Vt.	1935	15	85,530	71,281	-	1,212	-	-	-	5,396.77	5,396.77
	1936	60	430,059	525,710	415	4,634	-	-	-	18,963.17	18,963.17
	Total	-	515,589	596,991	415	5,846	-	-	-	24,359.94	24,359.94
Mass.	1935	6	23,875	13,457	61	971	144.60	-	-	3,914.75	4,059.35
	1936	29	162,623	175,671	249	3,069	801.00	588.17	-	13,920.79	15,309.96
	Total	-	186,498	189,128	310	4,040	945.60	588.17	-	17,835.54	19,369.31
Conn.	1935	1	2,043	-	-	129	-	254.05	-	380.75	634.80
	1936	3	42,818	-	-	499	-	566.20	-	1,756.13	2,322.33
	Total	-	44,861	-	-	628	-	820.25	-	2,136.88	2,957.13
Rhode Is.	1935	4	900	72,778	-	58	-	94.14	-	339.42	433.56
	1936	12	15,443	30,851	119	775	-	525.56	405.00	4,135.40	5,065.96
	Total	-	16,343	103,629	119	833	-	619.70	405.00	4,474.82	5,499.52
N.Y.	1935	37	325,335	69,081	904	3,050	-	-	-	12,745.62	12,745.62
	1936	98	502,800	296,029	1,475	6,117	-	716.32	-	35,397.46	36,113.78
	Total	-	828,135	365,110	2,379	9,167	-	716.32	-	48,143.08	48,859.40
Pa.	1935	40	31,214	*	297	1,502	-	-	-	6,276.84	6,276.84
	1936	114	145,642	*	1,348	5,072	-	-	-	22,291.65	22,291.65
	Total	-	176,856	*	1,645	6,574	-	-	-	28,568.49	28,568.49
Total	1935	156	616,026	405,569	1,591	10,937	144.60	1,036.64	-	46,939.28	48,120.52
	1936	499	2,124,601	2,157,787	4,918	32,701	801.00	3,927.96	405.00	153,769.78	158,903.74
	Total	-	2,740,627	2,563,356*	6,509	43,638	\$945.60	\$4,964.60	\$405.00	\$200,709.06	\$207,024.26

*In Pennsylvania, several hundred thousand acres were eliminated, but no definite record was kept.

Nursery Sanitation

Under the WPA program in six states, sanitation zones around eleven pine-growing nurseries were cleared of Ribes during the spring of 1936. This work assured the continued production of disease-free pines for use on reforestation projects. A total of 6,348 acres were eradicated of 5,159 wild Ribes and 111 cultivated bushes, as a result of 859 man days of labor.

Table 14.--Summary of Nursery Sanitation Work under the WPA Program
In the Northeastern States

State	Type of Erad.	No. Nurseries Worked	Acreage Examined	Ribes Pulled		Total Men Days	Cost				Per Acre	
				Wild	Cult.		Indiv.	State	W.P.A.	Total	Cost	Ribes
N. H.	Reerad.	1	176	108	-	119	-	-	\$ 599.00	\$ 399.00	\$2.27	0.6
Vt.	"	1	380	257	75	75	-	24.00	218.27	242.27	.638	0.7
Mass.	"	2	487	1,574	-	247	-	438.48	822.90	1,261.38	2.59	3.7
Conn.	"	2	932	53	8	70	-	-	159.35	159.35	.171	0.0
N. Y.	"	3	3,990	1,285	-	260	-	50.96	1,093.25	1,144.21	.287	0.0
Pa.	"	2	383	1,882	28	68	63.00	-	238.02	301.02	.786	0.3
Totals	All Reerad.	11	6,348	5,159	111	859	\$63.00	\$513.44	\$2,930.79	\$3,507.23	.552	0.3

Elimination of Ribes Nigrum (European Black Current)

Elimination of Ribes nigrum, the most dangerous host plant of the blister rust disease, was conducted chiefly during the fall of 1935 as a special minor project under the WPA program in Massachusetts. This work completed the eradication of such bushes from the entire mainland of the state. The detailed accomplishments are as follows:

No. townships in which work done.....	12
No. properties inspected.....	49,466
No. patches located.....	468
No. Ribes located - { Nigrum.....	2,392
{ Other.....	87
No. Ribes pulled - { Nigrum.....	1,914
{ Other.....	0
Total men days.....	294
(Individuals.....	\$ 242.90
Cost - (WPA.....	1,712.75
(Total.....	\$1,955.65

Blister Rust Canker Elimination

Canker elimination work was restricted to a few publicly-owned pine groves in New York and Vermont during the fall of 1935 and 1936. The results of this project are shown in Table 15.

Table 15.-Blister Rust Canker Elimination Work under WPA Program
In Northeastern States - 1935 and 1936

State.	Year	Est. No. Pines Examined	No. Fatally Infected Pines Cut Down	No. Pines Treated for Infection	No. Cankers Removed		Man Days	Total Cost (All WPA)
					Branch	Stem		
Vt.	1935	16,900	558	1,124	1,176	23	186	\$ 578.85
	1936	14,600	686	1,347	1,364	19	297	959.95
	Total	31,500	1,244	2,471	2,540	42	483	1,538.80
N. Y.	1935	197,323	30,087	24,685	30,912	-	2,264	9,005.94
	1936	151,885	39,983	25,600	31,054	-	2,179	8,544.20
	Total	349,208	70,070	50,285	61,966	-	4,443	17,550.14
All States	1935	214,223	30,645	25,809	32,038	23	2,450	9,584.79
	1936	166,485	40,669	26,947	32,418	19	2,476	9,504.15
	Total	380,708	71,314	52,756	64,506	42	4,926	\$19,088.94

Special Field Studies

Check on cultivated Ribes: In New Hampshire, the control areas in 23 towns were reexamined for cultivated Ribes during the fall of 1935 to determine existing conditions. A total of 9,986 properties were inspected and 627 patches of Ribes were located. These patches contained 106 Ribes nigrum and 2,627 other cultivated bushes. The project consumed 339 man days and cost \$1,152.01.

Pine infection studies: In four states (New Hampshire, Vermont, Massachusetts and Connecticut) WPA laborers were employed for 571 man days in making pine infection studies under the direction of 8 district leaders. The white pines were examined for infection on 33.9 miles of rod-wide strip lines and in 22 plots comprising 77 acres. Also, in Connecticut, 191 man days were used in making a strip line survey to determine the board foot contents of the white pines in the township of Norfolk. The data for these studies have not as yet been submitted to the Cambridge Office, consequently a summary has not been prepared.

State and Local Cooperation on WPA Program in Northeastern States

State and local cooperation on the federal WPA program was manifested at all times. This support is evidenced by these cooperating agencies expending \$74,581.77 on field activities during 1935 and 1936. This amount represents contributions by eight states, 2 counties, 55 townships and 180 individuals.

The state expenditures of \$54,235.08 were chiefly for field supervision and checking, crew foremen, transportation, and a small amount for labor and equipment. The counties and towns spent \$19,083.59, mainly for transportation of WPA crews, while the individual expenditures of \$1,283.10 represented the cost of labor. The amounts spent by the states and their local cooperators are shown in Table 16.

In several instances local relief agencies have supplied their workers with rubber boots to protect them when working in swampy locations. This arrangement has materially increased the efficiency of work in local areas, since it has eliminated the otherwise constant complaint of wet feet. It has also protected the workers from illness, particularly in the case of employees who have never been accustomed to work under such conditions.

In addition to the above mentioned cooperation, the states contributed office space and equipment for their respective state leaders, and paid the expenses of these men, except in Connecticut and Vermont. The State of New Hampshire also paid most of the expenses of four of the district leaders.

In Maine and New Hampshire, the WPA activities had a beneficial effect in stimulating town cooperation on the regular control program. During 1936, 84 towns appropriated \$17,150.00 for such work, compared with \$16,095.00 in 1935. Also, tentative reports of town cooperation in these two states for 1937 show that 116 towns made available \$25,000.00. This amount includes \$4,050.00 which was not used in Maine during 1936 and was re-appropriated by 25 towns for 1937.

Table 16.-State and Local Cooperative Funds Spent in Conjunction with WPA Program in Northeastern States during 1935 and 1936

State	State Funds	County Funds		Town Funds		Individual Funds		Total
		No. Counties	Amount	No. Towns	Amount	No. Indiv.	Amount	
Maine	\$ 2,820.32	-	-	10	\$ 594.39	-	-	\$ 3,414.71
N. H.	1,859.80	2	987.00	8	347.75	-	-	3,194.55
Vt.	424.90	-	-	19	9,711.75	-	-	10,136.65
Mass.	3,449.07	-	-	15	6,872.70	176	874.10	11,195.87
R. I.	1,114.98	-	-	-	-	-	-	1,114.98
Conn.	931.12	-	-	3	550.00	2	346.00	1,827.12
N. Y.	43,299.58	-	-	-	-	-	-	43,299.58
N. J.	335.31	-	-	-	-	-	-	335.31
Pa.	-	-	-	-	-	2*	63.00	63.00
Totals	\$54,235.08	2	\$987.00	55	18,076.59	180	1,283.10	\$74,581.77

*These individuals (nurserymen) also paid \$151.00 compensation to owners of cultivated Ribes destroyed in connection with sanitation projects.

W.P.A. Funds for Blister Rust Control in Northeastern States - 1955 and 1956

AllotmentsTable 17.
Appropriation 001089

State	Alotments	Date of A-3a	Maine	N. H.	Vt.	Mass.	R. I.	Conn.	N. Y.	N. J.	Pa.	All States
	Original	7/22/35	\$255,262	\$250,587	\$151,283	\$157,669	\$20,212	\$51,127	\$421,804	\$2,958	\$200,749	\$1,511,661
	Recision	6/10/36	31,500	35,000	22,500	20,000	3,000	6,000	56,500	-	52,000	206,200
	Increase	7/8/36	26,000	18,500	13,000	13,000	2,000	3,500	37,000	1,000	18,000	132,000
Total Funds (001089)			\$249,762	\$234,087	\$141,783	\$150,669	\$19,212	\$48,627	\$402,304	\$3,958	\$186,749	\$1,457,350

Table 18.
Appropriation 201085

Allotments	Date of A-3a	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$
Original	7/28/36	\$ 53,600	\$ 34,100	\$ 16,200	\$ 23,500	\$ 4,500	\$ 2,300	\$ 91,700	\$ 800	\$ 24,500	\$ 251,200
Increase	8/24/36	-	25,300	10,000	-	-	-	25,000	-	7,500	67,800
Recision	8/24/36	3,300	-	-	-	-	1,600	-	-	-	4,900
Increase	9/15/36	46,500	52,600	33,200	50,000	2,900	7,000	69,000	600	37,000	278,800
Increase	11/27/36	-	-	-	5,000	1,000	1,000	10,000	-	1,000	19,000
Recision	11/27/36	-	14,000	3,000	-	-	-	-	-	-	17,000
Recision	12/31/36	-	-	3,340	-	-	-	4,000	-	-	7,340
Total Funds (201085)		96,800	98,000	53,060	58,500	8,400	8,700	191,700	1,400	70,000	586,560
GRAND TOTALS (001089 + 201085)		\$346,562	\$332,087	\$194,843	\$209,169	\$27,612	\$57,327	\$594,004	\$5,358	\$256,749	\$2,023,710

Table 19.- Total W.P.A. Expenditures During The Calendar Years 1935 and 1936 For The Various Blister Rust Control Projects in The Northeastern States

State	Year	Supervision and B.R.C. Agent Activities	Eradication Assistants and Checkers	Ribes Eradication	Black Currant Elimination	Nursery Sanitation	Blister Rust Canker Elimination	Field Data	Totals
Maine	1935	5,642.79	5,088.60	80,785.14	-	-	-	9,414.39	100,930.92
	1936	15,376.85	14,825.78	178,648.09	-	-	-	29,153.26	238,003.98
	Total	21,019.64	19,914.38	259,433.23	-	-	-	38,567.65	338,934.90
N.H.	1935	6,302.24	4,104.95	60,440.47	-	-	-	12,598.20	83,445.86
	1936	16,287.71	14,596.10	175,273.84	-	399.00	-	32,565.44	239,122.09
	Total	22,589.95	18,701.05	235,714.31	-	399.00	-	45,163.64	322,567.95
Vt.	1935	4,019.91	3,424.52	25,665.40	-	-	578.85	5,396.77	39,085.45
	1936	12,364.89	8,946.50	111,262.03	-	218.27	959.95	18,963.17	152,714.61
	Total	16,384.80	12,371.02	136,927.43	-	218.27	1538.80	24,359.94	191,800.26
Mass.	1935	6,316.43	2,034.50	37,768.44	1157.00	-	-	4,412.80	51,639.17
	1936	9,558.22	4,750.12	81,289.47	555.75	822.90	-	15,289.87	112,266.33
	Total	15,874.65	6,784.62	119,057.91	1712.75	822.90	-	19,702.67	163,955.50
R.I.	1935	333.32	-	7,394.63	-	-	-	580.75	8,108.70
	1936	555.91	-	16,031.94	-	-	-	1,756.13	18,343.98
	Total	889.23	-	23,426.57	-	-	-	2,136.88	26,452.68
Conn.	1935	255.65	894.60	17,665.91	-	-	-	1,777.09	20,593.25
	1936	1,963.01	1,488.55	25,865.46	-	159.35	-	5,593.57	34,869.94
	Total	2,218.66	2,383.15	43,531.37	-	159.35	-	7,170.66	55,463.19
N.Y.	1935	12,962.66	6,337.35	118,658.78	-	-	9005.94	12,745.62	159,710.51
	1936	30,223.79	15,421.98	327,695.51	-	1093.25	8544.20	35,397.46	418,376.19
	Total	43,186.45	21,759.33	446,354.29	-	1093.25	17,550.14	48,143.08	578,086.50
N.J.	1935	102.13	435.25	1,869.33	-	-	-	-	2,406.71
	1936	69.09	556.00	1,992.97	-	-	-	-	2,618.06
	Total	171.22	991.25	3,862.30	-	-	-	-	5,024.77
Pa.	1935	3,216.81	2,967.20	43,159.05	-	-	-	6,276.84	55,619.89
	1936	10,990.68	12,986.03	144,887.11	-	238.02	-	22,291.65	191,595.69
	Total	14,207.49	15,953.23	188,046.14	-	238.02	-	28,568.49	247,013.59
Totals	1935	39,151.94	25,286.97	393,407.13	1157.00	-	9584.79	53,002.46	521,590.29
	1936	97,390.15	73,571.06	1,062,946.42	555.75	2930.79	9504.15	160,810.55	1,407,708.87
	Grand Total 1935-1936	136,542.09	98,858.03	1,456,353.55	1712.75	2930.79	19,088.94	213,813.01	1,929,299.16

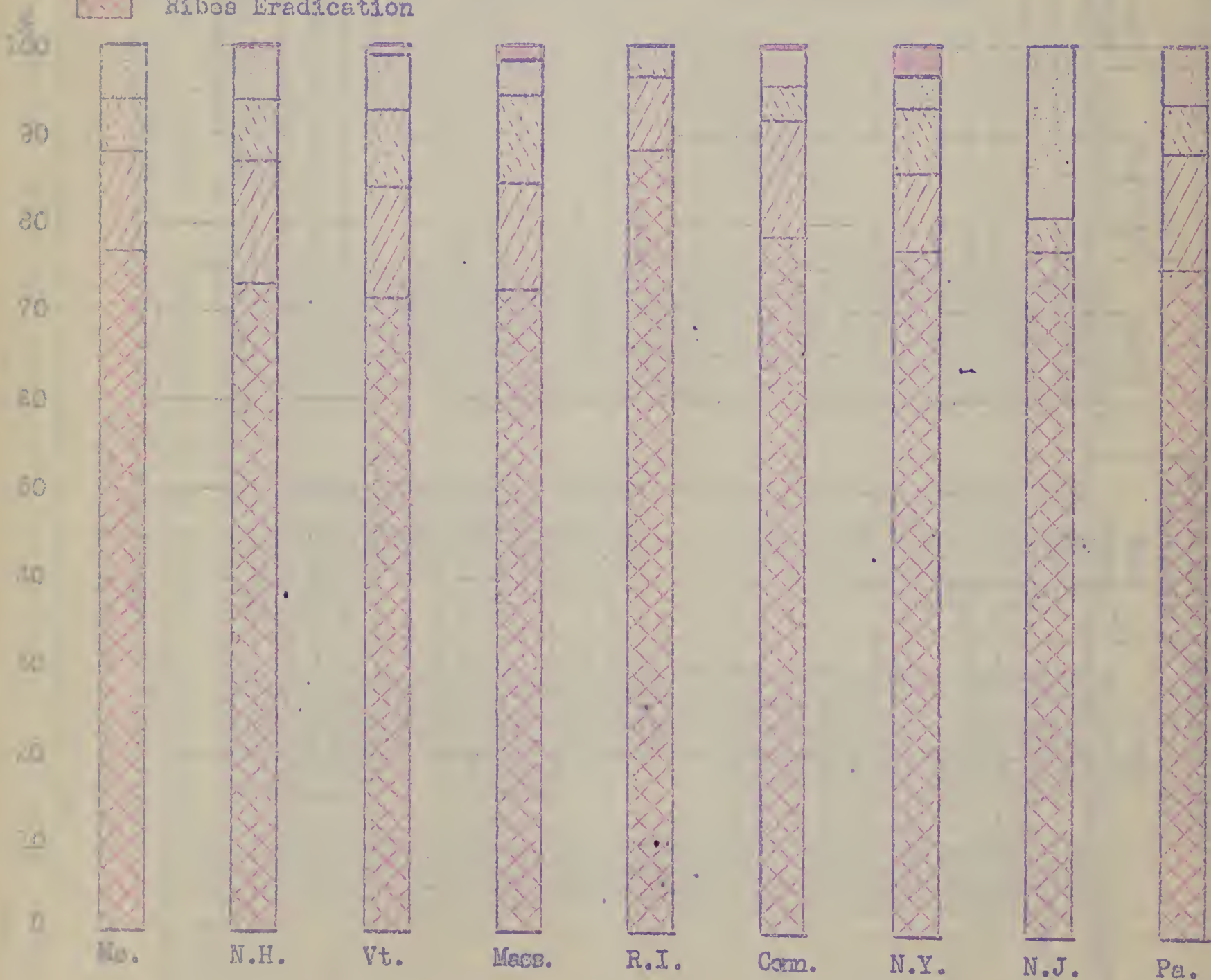
An additional WPA expenditure of \$31,136.86 was incurred at the Cambridge Office during 1935 and 1936 - Salaries \$24,248.28 - expenses \$6,888.58.

The 1936 WPA expenditures as listed in this table and others do not agree with bookkeeping sheets or BRC reports, since the two latter records include only actual payments during 1936, while the totals in the tables include all items paid and all known outstanding obligations incurred during 1936.

PERCENTAGE OF TOTAL WPA EXPENDITURES IN RESPECTIVE NORTHEASTERN STATES
PAID FOR EACH PROJECT DURING THE CALENDAR YEARS 1935 AND 1936

Legend

- Black Current Elimination - Nursery Sanitation - Blister Rust
Canker Elimination
- Eradication Assistants and Checkers
- General Supervision and Blister Rust Control Agent Activities
- Field Data
- Ribes Eradication



-3-

Table 20.--WPA Obligations for Wages and Salaries to December 31, 1936

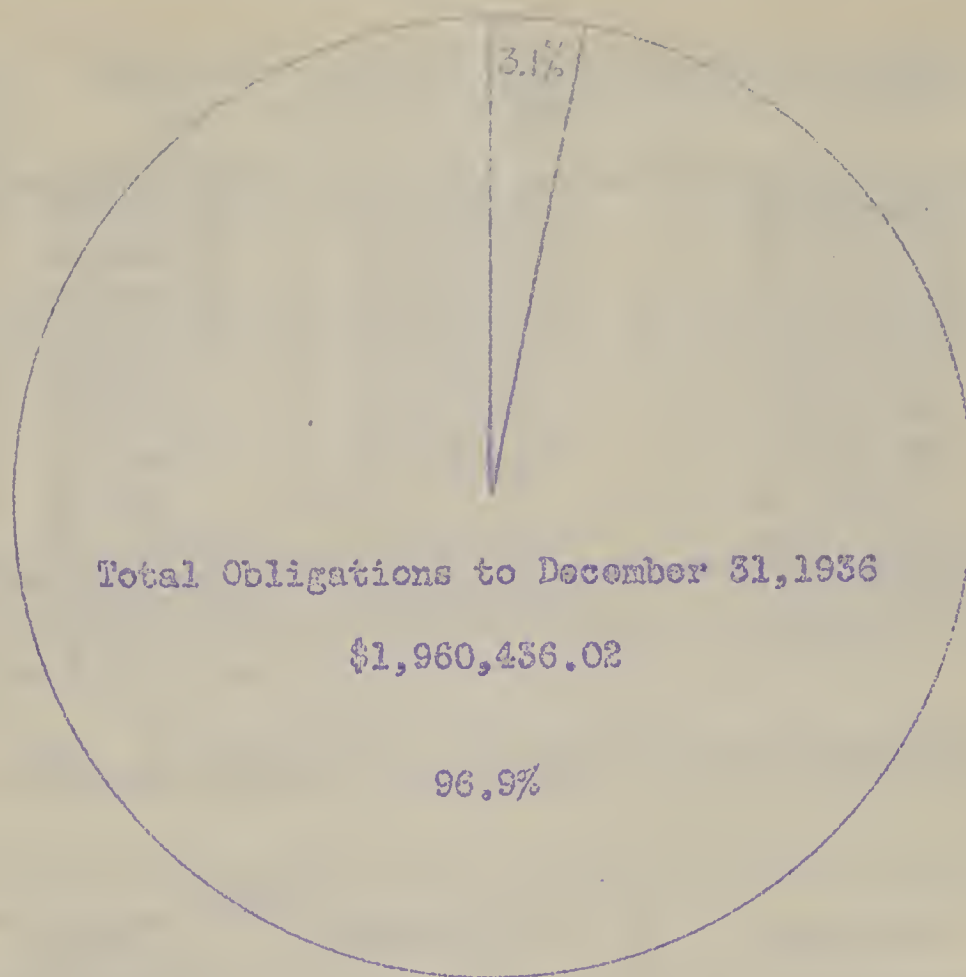
State	Wages of Security-Wage Workers		Salaries of Appointees	Total Wages and Salaries
	Relief	Non-Relief		
Maine	254,326.89	29,265.96	29,770.12	313,362.97
New Hampshire	222,936.68	49,466.17	30,443.16	302,846.01
Vermont	144,786.60	14,344.42	19,951.55	179,082.57
Massachusetts	152,414.43	5,609.07	24,786.45	182,809.95
Rhode Island	22,943.57	2,427.54	833.30	26,204.41
Connecticut	46,855.48	1,198.93	2,470.50	50,524.91
New York	480,739.77	26,624.97	56,743.34	564,108.08
New Jersey	3,810.55	-	902.75	4,713.30
Pennsylvania	198,318.40	11,208.73	23,866.09	233,393.22
Totals	\$1,527,132.37	\$140,145.79	\$189,767.26	\$1,857,045.42
% of Total	82.2	7.6	10.2	100.0

Table 21.--WPA Obligations for Expenses to December 31, 1936

State	Purchases	Travel		Total
		Appointees	Crew Transportation	
Maine	7,560.28	7,171.69	10,839.96	25,571.93
New Hampshire	4,389.33	5,384.54	9,948.07	19,721.94
Vermont	5,461.07	4,828.55	2,428.07	12,717.69
Massachusetts	9,385.98	2,819.29	77.14	12,282.41
Rhode Island	26.65	.50	221.12	248.27
Connecticut	2,078.07	1,519.31	1,340.90	4,938.28
New York	8,311.90	3,534.93	2,131.63	13,978.46
New Jersey	129.95	181.52	-	311.47
Pennsylvania	4,632.48	4,113.79	4,873.88	13,620.15
Totals	41,975.71	29,554.12	31,860.77	103,390.60
% of Total	40.6	28.6	30.8	100.0

Table 22.--Status of WPA Funds As of December 31, 1936

State	Total Allotment	Total Obligations	Unencumbered Balance December 31, 1936
Maine	346,562.00	338,934.90	7,627.10
New Hampshire	332,087.00	322,567.95	9,519.05
Vermont	194,843.00	191,800.26	3,042.74
Massachusetts	209,169.00	195,092.36	14,076.64
Rhode Island	27,612.00	26,452.68	1,159.32
Connecticut	57,327.00	55,463.19	1,863.81
New York	594,004.00	578,086.54	15,917.46
New Jersey	5,358.00	5,024.77	333.23
Pennsylvania	256,749.00	247,013.37	9,735.63
Totals	2,023,711.00	1,960,436.02	63,274.98
% of Total	100.0	96.9	3.1

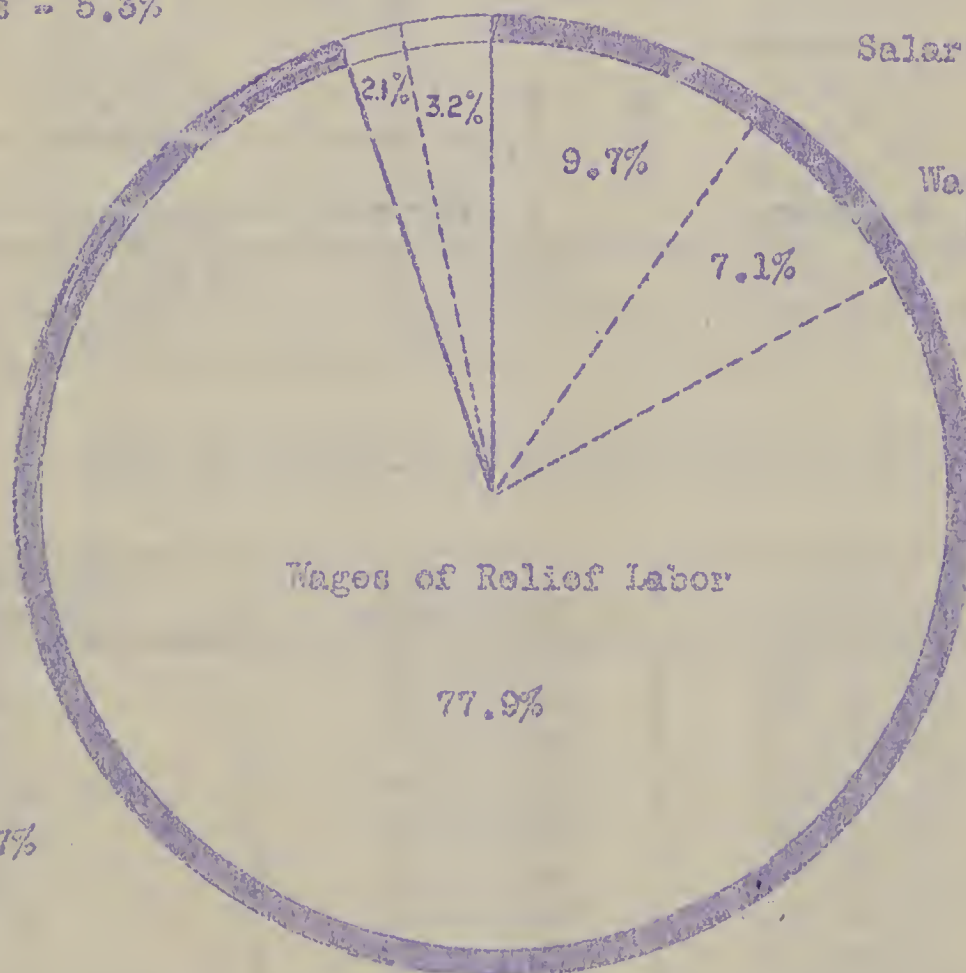


Unobligated Balance
12/31/36
\$63,274.98

W.P.A. ALLOTMENTS - \$2,025,711.

Expenses - 5.3%

Purchases
Travel



Salaries - 84.7%

TOTAL OBLIGATIONS - \$1,960,436.02

- (1) Supplies, materials and equipment (1034 vouchers).
- (2) Travel, subsistence and miscellaneous (1012 vouchers) for supervisory personnel consisting of 82 supervisors, 29 district leaders, 4 state leaders and 4 regional men - also all transportation for W.P.A. crews.

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PLANT DISSEMINATION
Answered . . .

ANNUAL REPORT
ON
WHITE PINE BLISTER RUST CONTROL
SOUTHERN APPALACHIAN DISTRICT

1 9 3 6

By
Roy G. Pierce, Pathologist
DIVISION OF PLANT DISEASE CONTROL

June 1937

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GOOD STAND OF NATIVE WHITE PINE IN FARM WOODLOT IN TENNESSEE

ANNUAL REPORT FOR
CALENDAR YEAR 1 9 3 6 ON
White Pine Blister Rust Control
In Southern Appalachian States

- - - -

Introduction and Summary

Scouting for blister rust was carried on in the Southern Appalachian States at various times from 1909 to 1932. While eradication of cultivated black currants was carried on in Delaware at the instigation of the State Plant Pathologist and our agents about 1910 or 1911, and eradication of wild Ribes was carried on in Maryland at Mr. Nicola's place near Thayerville in Garrett County by the State Forester prior to 1930, no systematic Ribes eradication was carried on until 1932, at the advent of the E. C. W.

From 1932 to 1935 work was carried on in eight Southern States and completed for the present in Kentucky and South Carolina.

In 1936 the work was carried on with increased funds made available by the Works Progress Administration. Almost \$200,000.00 were expended by the federal government and the cooperating states in the calendar year 1936. In the four omnibus Statistical Tables immediately following, all work for the Southern Appalachian States for 1936, and for all preceding years is summarized.

THE HISTORY OF

THE CITY OF BOSTON

FROM THE FIRST SETTLEMENT TO THE PRESENT TIME

BY SAMUEL JOHNSON

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THE HISTORY OF THE CITY OF BOSTON

THE HISTORY OF

The work in the region for 1936 is largely given in Tables, since these present the facts in as concise a form as is possible. This annual report is divided into sections by topics, rather than by states, since the various State Reports are available for consultation, should one desire to know everything pertaining to a particular state.

OMNIBUS STATISTICAL TABLES
OF ALL BLISTER RUST CONTROL WORK

IN
SOUTHERN APPALACHIAN STATES

IN 1936 and FROM

1918 - 1936

TABLE I.

-3-

SUMMARY OF 1936 RIBES ERADICATION

States	1ST WORKING								2ND WORKING				3RD WORKING				TOTALS				PERCENTAGE			Per Acre			Man-Days		
	Acreage Worked	No. Ribes Destroyed		No.8 hour m-days	Acreage Worked	No. Ribes Destroyed		No.8 hour m-days	Acreage Worked	No. Ribes Destroyed		No. 8 hour man-days	Acreg. Worked	No. Ribes Destroyed		No.8 hour m-days	Acreage Worked			Ribes									
		Wild	Culti.			Wild	Culti.			Wild	Culti.			1st work	2nd work		3rd work	1st work	2nd work	3rd work	1st Work	2nd work	3rd work						
Georgia	108,950	1,760,436	46,571	3,350	155	29,858	0	300	0	0	0	0	109,105	1,790,294	46,571	3,650	99.86	.14		16.6	192.5		.03	1.92					
Kentucky	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0		0	0					
Maryland	22,281	511,614	881	2,681	1,899	21,894	92	434	5,988	10,478	323	498	30,168	543,986	1,296	3,613	73.8	6.3	19.9	23.0	11.5	1.78	.12	.23	.083				
No. Carolina	760,467	321,160	313,232	12,046	216,206	30,311	37,417	2,490	0	0	0	0	976,673	351,471	350,649	14,536	77.9	22.1		0.83	0.31		.016	.012					
So. Carolina	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0											
Tennessee	100,515	1,232,578	27,444	4,558	1,928	55,116	0	200	0	0	0	0	102,443	1,287,694	27,444	4,758	98	2		10.2	26.0		.04	0.104					
Virginia	101,047	867,120	17,925	9,757.5	6,905	143,591	0	2,575.5	0	0	0	0	107,952	1,010,711	17,925	12,333.	93.5	6.4		8.76	20.8		.097	.373					
West Virginia	75,813	314,106	394	4,838.1	11,115	61,933	0	989.4	0	0	0	0	86,928	376,039	394	5,827.5	87.2	12.8		4.15	5.57		.0638	.0890					
Total	1,169,075	5,007,014	406,447	37,230.6	238,208	342,703	37,509	6,988.9	5,988	10,478	323	498.0	1413,269	5,360,195	444,279	44,717.5	82.8	16.8	0.4	4.6	1.6	1.7	.032	.029	.08				

TABLE II.
SUMMARY OF 1936 RIBES ERADICATION BY PROGRAMS
(Including All Work - 1st, 2nd and 3rd Workings)

States	Total Acreage Worked 1st, 2nd & 3rd.	REGULAR AND COOPERATIVE (a)				W. P. A. AND E. R. A				E. C. W				P. W. A Or N. R. A				TOTAL EMERGENCY PROGRAMS			
																		(W.P.A. - E. C. W. P. W. A.)			
		Acreage Worked	No. Ribes Destroyed		No. 8 hour man-days	Acreage Worked	No. Ribes Destroyed		No. 8 hour man- days	Acreage Worked	No. Ribes Destroyed		No. 8 hour man- days	Acreage Worked	No. Ribes Destroyed		No. 8 hour man- days	Acreage Worked	No. Ribes Destroyed.		No. 8 hour man- days
			Wild	Culti.			Wild	Culti.			Wild	Culti.			Wild	Culti.			Wild	Culti.	
Georgia	109,105	0	0	0	0	109,105	1,790,294	46,571	3,650	0	0	0	0					109,105	1,790,294	46,571	3,650
Kentucky	No work					No work				No work				N				No work			
Maryland	30,168	185	74,000	0	149	29,801	439,221	1,296	3,346	182	30,765	0	118	0				29,983	469,986	1,296	3,464
No. Carolina	976,673	5,195	690	2,269	105	971,478	350,781	348,380	14,431	0	0	0	0	N				971,478	350,781	348,380	14,431
So. Carolina	0	0	0	0	0	0	0	0	0	0	0	0	0	E				0	0	0	0
Tennessee	102,443	0	0	0	0	102,263	1265,572	27,444	4,739	180	22,122	0	19					102,443	1,287,694	27,444	4,758
Virginia	107,952	600	3,000	0	60.5	104,360	904,199	17,919	10,118.5	2992	103,512	6	2154.0					107,352	1,007,711	17,925	12,272.5
West Virginia	86,928	0	0	0	0	71,388	298,661	394	4,234.1	15540	77,378	0	1593.4					86,928	376,039	394	5,827.5
	1413,269	5,980	77,690	2,269	314.5	1388,395	5048,728	442,004	40,518.6	18894	233,777	6	3884.4					1,407,289	5,282,505	442,010	44,403

Year	No. of Inhabitants	No. of Inhabitants	Total		Total
			1870	1880	
1870	108,100	1,480,470	1,588,570	1,588,570	1,588,570
1880	0	0	0	0	0
1890	37,231	40,117	77,348	77,348	77,348
1900	321,400	321,400	642,800	642,800	642,800
1910	0	0	0	0	0
1920	100,000	1,221,245	1,321,245	1,321,245	1,321,245
1930	101,000	307,100	408,100	408,100	408,100
1940	102,000	310,000	412,000	412,000	412,000
1950	103,000	313,000	416,000	416,000	416,000
1960	104,000	316,000	420,000	420,000	420,000
1970	105,000	319,000	424,000	424,000	424,000
1980	106,000	322,000	428,000	428,000	428,000
1990	107,000	325,000	432,000	432,000	432,000
2000	108,000	328,000	436,000	436,000	436,000
2010	109,000	331,000	440,000	440,000	440,000
2020	110,000	334,000	444,000	444,000	444,000

Year	No. of Inhabitants	No. of Inhabitants	Total		Total
			1870	1880	
1870	103,100	1,480,470	1,583,570	1,583,570	1,583,570
1880	0	0	0	0	0
1890	30,100	40,117	70,217	70,217	70,217
1900	30,100	40,117	70,217	70,217	70,217
1910	0	0	0	0	0
1920	0	0	0	0	0
1930	0	0	0	0	0
1940	0	0	0	0	0
1950	0	0	0	0	0
1960	0	0	0	0	0
1970	0	0	0	0	0
1980	0	0	0	0	0
1990	0	0	0	0	0
2000	0	0	0	0	0
2010	0	0	0	0	0
2020	0	0	0	0	0

TABLE III.

SUMMARY OF ALL OTHER CONTROL WORK FOR 1936

States	Cultivated Black Currant Eradication				Nursery Sanitation					Pre-Erad Survey		Treatment Infected White Pine				
	No. Inspections Made	No. Locations Found	No. C. B. C. Destroyed	No. 8 Hour Man-Days	No. Nur. Worked	No. W. P. in Nurseries	No. Ribes Destroyed	No. 8 hour man-days	Federal Permits	No. Acres mapped w. p. and Protective Zones	No. 8 hour man-days	No. Trees Examined	No. Trees Trtd.	No. Cankers Rmvd	No. 8 hour m-day	No. 8 hour m-day
							Wild	Culti.	Required	Recvd						
Georgia						No work										
Kentucky	N					No work										
Maryland	O				10	448,925	3,946	11,390	20	105	6	6	5,617	354	2,878	1,355.14
No. Carolina	N				0	0	0	0	0	0	0	0	6,000	480	0	0
So. Carolina	E				0	0	0	0	0	0	0	0	0	0	0	0
Tennessee					0	0	0	0	0	0	0	0	102,443	941	0	0
Virginia					6	61,854	10,575	22	79	47	4	4	108,919	2,198	3,151	1,005
West Virginia					2	734,000	780	4,040	21	134.1	2	2	103,146	2,811.18	0	0
Total					18	1244,779	15,301	15,452	120	286.1	12	12	446,815	7,284.18	6,029	2,360

TABLE IV.

SUMMARY EXPENDITURES FOR 1936

States	Total			Recapitulation					By Activities (Federal and State)						
	State (Incl. all Coop. Funds)			By Program (Federal only)					Supervision Incl. State and District Leaders	Ribes Erad.	C.B.C. Erad.	Nursery Sanitation	Canker Elimination	Pre. Eradication Survey	All Other (Checking Fielddata & Misc.)
	Federal		Grand Total	Reg. and Coop. (a)	W.P.A& E.R.A	E. C. W.	P. W. A.	Total							
Georgia	22,433.37	900.00	23,333.37		22,433.37	0	0	22,433.37	4,383.33	9,050.04	0	0	0	9000.00	\$ 900.00
Kentucky	No work			No work					no work						
Maryland	16,922.10	1,000.00	17,922.10	323.14	16,480.96	118.00	0	16,598.96	4,969.02	9,953.65	0	250.00	228.03	936.10	1,585.30
No. Carolina	51,466.16	3,120.50	54,586.66	0	51,466.16	0	0	51,466.16	8,649.36	37,668.71	0	189.42	0	1682.56	6,396.61
So. Carolina	No work			No work					No work						
Tennessee	16,864.16	1,000.00	17,864.16	0	16,845.46	18.70	0	16,864.16	5,519.07	8,158.32	0	0		2842.61	1,344.16
Virginia	46,751.08	952.00	47,703.08	4,982.74	35,757.92	6,010.42	0	41,768.34	21,384.58	21,824.39	0	142.71	334.10	4017.30	0
W. Virginia	36,454.06	1,354.31	37,808.37	419.89	32,521.44	3,512.73	0	36,034.17	10,011.86	17,057.00	0	686.00	0	10053.51	0
Total	190,890.93	8,326.81	199,217.74	5,725.77	175,505.31	9,659.85	0	185,165.16	54,917.22	103,712.11	0	1268.13	562.13	28586.08	10,226.07

TABLE IA

SUMMARY OF ALL RIBES ERADICATION 1918-1936(INCLUSIVE)

-5-

States	Total Acreage W. P.	Acreage W.P. Worth Protec- tion	Acreage Control Areas W.P. Plus Zones	1ST WORKING				2ND WORKING				3RD WORKING				Totals			No. 8 Hour Man- Days	PERCENTAGES Acreage Worked			PER ACRE					
				Acreage Worked	No. Ribes Destroyed		No. 8 hour man- days	Acreage Worked	No. Ribes Destroyed		No. 8 hour man days	Acreage Worked	No. Ribes Destroyed		No. 8 hour man days	Acreage Worked	No. Ribes Destroyed			1st Work	2nd Work	3rd. work	Ribes			Man-Days		
					Wild	Culti.			Wild	Culti.			Wild	Culti.			1st Work	2nd Work					3rd Work	1st Work	2nd work	3rd Work		
Georgia	452,025*	400,000*	758,800*	424,260	2,566,640	75,733	7,027	155	29,858	659	368	0	0	0	0	424,415	2,596,498	76,392	7,395	99.86	0.14		6.2	197		.017	2.37	
Kentucky	62,222	26,372	61,523	61,523	2,095	1,830	837	0	0	0	0	0	0	0	0	61,523	2,095	1,830	837	100.0			0.06	0		.0136	.0	
Maryland	80,225	72,006	191,011	155,925	2,138,103	2,431	7,538	20,971	245,498	1,514	2,078	5,988	10,478	323	498	182,884	2,394,079	4,268	10,114	85.4	11.4	3.2	13.7	11.7	1.7	.048	.099	.083
No.Carolina	847,546	847,546	2248,839	1945,607	484,297	507,720	23,163	231,606	30,311	41,536	2,637	0	0	0	0	2,177,213	514,608	549,256	25,800	89.4	10.6		0.51	0.31		.012	.011	
So.Carolina	13,852	13,852	26,535	26,535	0	7,128	1,241	1,000	0	347	174	0	0	0	0	27,535	0	7,475	1,415	96.37	3.63		0.27	0.35		.048	.174	
Tennessee	250,674	180,075	531,193	260,591	1,623,859	31,579	7,746	2,807	112,344	0	274	0	0	0	0	263,398	1,736,203	31,579	8,020	90.1	1		6.4	40.0		.03	.098	
Virginia	300,000*	243,000	900,000	324,584	3,393,025	40,762	37,136.5	14,615	299,109	53	3,657.5	0	0	0	0	339,199	3,692,134	40,815	40,794	95.7	4.3		10.58	20.5		0.11	.25	
W. Virginia	135,000	120,000	430,000	148,720	896,453	5,807	10,082.1	13,597	74,520	0	1,350.4	0	0	0	0	162,317	970,973	5,807	11,432.5	91.62	8.38		6.03	5.48		.0680	.0992	
Total	2,141,544	1,902,851	5,147,901	3,347,745	11,104,472	672,990	94,770.6	284,751	791,640	44,109	10,538.9	5,988	10,478	323	498	3,638,484	11,906,590	717,422	105,807.5	92.01	7.83	0.16	3.52	2.94	1.7	.028	.037	.083

*Estimated

TABLE IIA.

SUMMARY OF ALL RIBES ERADICATION BY PROGRAMS 1918-1936 INCLUSIVE
(1st, 2nd and 3rd Workings)

(1st, 2nd and 3rd Workings)																	TOTAL EMERGENCY PROGRAMS				
States	Total Acreage Worked 1st, 2nd & 3rd.	REGULAR AND COOPERATIVE (a)				W.P.A. AND E. R. A				E. C. W.				P. W. A. OR N. R. A				(W.P. A. - E. C. W. - P. W. A)			
		No. Ribes		No. 8 hour m-days	Acreage Worked	No. Ribes		No. 8 hour man-days	No. Ribes		No. 8 hour man-days	No. Ribes		No. 8 hour man-days	No. Ribes		Acreage Worked	No. Ribes		No. 8 hour man-days	
		Destroyed	Culti.			Destroyed	Culti.		Destroyed	Culti.		Destroyed	Culti.								
															Wild	W.P.A.		W.P.A.	W.P.A.		W.P.A.
Georgia	424,415	0	0	0	0	233,227	2,592,347	55,290	6,611	15,493	0	235	51	175,695	4,151	20,867	733	424,415	2,596,498	76,392	7,395
Kentucky	61,523	0	0	0	0	0	0	0	0	0	0	0	0	61,523	2,095	1,830	837	61,523	2,095	1,830	837
Maryland	182,884	985	74,000	1	149	48,288	747,910	11,726	5,118	6,175	391,319	12	1,258	127,436	1,190,850	2,529	3,589	181,899	2,320,079	4,267	9,965
No.Carolina	2177,213	5,195	690	2,269	105	1,212,667	489,717	419,683	21,174	54,168	360	269	570	905,183	23,841	127,035	3,951	2172,018	513,918	546,987	25,695
So.Carolina	27,535	0	0	0	0	4,050	0	556	596	888	0	0	21	22,597	0	6,919	798	27,535	0	7,475	1,415
Tennessee	263,398	0	0	0	0	117,702	1458,417	29,521	5,847	23,356	111,091	144	734	122,340	166,695	1,914	1,439	263,398	1,736,203	31,579	8,020
Virginia	339,199	10,226	59,372	2	95.5	145,739	1047,716	19,555	13,493.5	58,834	1864,998	31	21,734.0	124,400	720,048	21,227	5,471.0	328,973	3,632,762	40,813	40,698.5
West Va.	162,317	268	2	0	-	86,924	418,013	1,104	5,457.1	129,080	211,927	0	3,565.4	46,045	341,031	4,703	2,410	162,049	970,971	5,807	11,432.5
Total	3638,484	16,674	134,064	2,272	349.5	1,848,597	6754,120	527,435	58,296.6	187,994	2569,695	691	27,933.4	1585,219	2448,711	187,024	19,228	3621,810	11,772,526	715,150	105458

State	W. T. Average	North W. T. Average	W. T. Average	W. T. Average	W. T. Average
Alabama	152,022*	400,000	152,000	152,000	152,000
Arkansas	92,822	20,000	92,822	92,822	92,822
California	30,222	12,000	30,222	30,222	30,222
Colorado	947,210	247,410	247,410	247,410	247,410
Connecticut	12,222	12,222	12,222	12,222	12,222
Delaware	220,074	180,074	220,074	220,074	220,074
Florida	300,000	343,000	300,000	343,000	300,000
Georgia	112,000	120,000	112,000	120,000	112,000
Idaho	211,244	120,000	211,244	120,000	211,244

Estimated

State	W. T. Average	North W. T. Average	W. T. Average	W. T. Average	W. T. Average
Alabama	152,022	400,000	152,000	152,000	152,000
Arkansas	92,822	20,000	92,822	92,822	92,822
California	30,222	12,000	30,222	30,222	30,222
Colorado	947,210	247,410	247,410	247,410	247,410
Connecticut	12,222	12,222	12,222	12,222	12,222
Delaware	220,074	180,074	220,074	220,074	220,074
Florida	300,000	343,000	300,000	343,000	300,000
Georgia	112,000	120,000	112,000	120,000	112,000
Idaho	211,244	120,000	211,244	120,000	211,244

TABLE IIIA

SUMMARY OF ALL OTHER CONTROL WORK 1918 - 1936 INCLUSIVE

-6-

States	Cultivated Black Currant Eradication				Nursery Sanitation				Pre-Eradication Survey		Treatment Infected White Pine					
	Number Inspections Made	Number Locations Found	Number C. B.C Destroyed	No. 8 hour-m-days	NO. Nur. Worked	Acreage in Nur. Control Areas	No. Ribes Destroyed		No.8 hour man-days	No. Acres Mapped White Pine and Protective Zones	No. 8 hour man-days	No. Trees Examined	No. Trees Treated	No. Trees Removed	No. Cankers Removed	No. 8 Hr. man-days
							Wild	Culti.								
Georgia	19	19	1,126	20.00	1	350	0	8	0.5	436,000	1,021	0	0	0	0	0
Kentucky	0	0	0	0	0	0	0	0	0	61,523	no data	N O N E				
Maryland	25	25	2,211	no data	13	4,121	11,390	160	362	139,311	747	2,878	1,355	14	6,071	83
No. Carolina	2	2	3	0.25	8	(1)	(2)	(3)	(4)	1,191,140	830	N O N E				
So. Carolina	0	0	0	0	0	0	0	0	0	26,535	0	"				
Tennessee	0	0	0	0	1	500	0	0	3	262,519	1,737	0	0	0	0	0
Virginia	24	24	12	0.25	12	13,191	192	1,730	99.1	332,456	3,566	17,906	2,800	399	14,918	463.5
W. Virginia	1	1	0	0.50	2	780	19,206	312	670.7	202,997	4,045.18	0	0	0	0	0
Total	71	71	3,352	21.00	56	18,942	30,788	2,210	1135.3	2,652,481	11,946.18	20,784	4,155	413	20,989	546.5

(1) This may have included some americanum in Maryland

(1) 930

(2) - 3,515

These figures were included in Ribes eradication in 1934 and 1935 and were not kept separately

(3) 409

(4) 133.5

TABLE IVA
SUMMARY OF ALL EXPENDITURES 1918-1936 INCLUSIVE

States	Total			Recapitulation					By Activities (Federal and State)						
	Federal	State (Incl. all Coop. Funds)	Grand Total	By Program (Federal Only)				Total Emergency Programs	Super vision Incl. St. & Dist	Ribes Erad.	C.B.C Erad. (1)	Nur. Sani- tation	Canker Elimi- nation	Pre- Eradication Survey	All Other Chkd. Field Data and Misc.
				Regular and Coop. (a)	W.P.A	E.C.W.	P. W. A								
Georgia	\$ 37,754.76	\$ 2352.50	40107.26	\$ 41.27	30,088.30	281.66	7343.53	37713.49	4383.33	23425.34	65	3.20	0	11,330.39	900.00
Kentucky	7,552.86	290.00	7842.86	1313.08	0	0	6239.78	6239.78	2672.71	4345.24	0	0	0	0(2)	824.91
Maryland	52,255.48	3602.50	55857.98	5239.95	23,576.62	1,273.00	22165.91	47015.53	20392.50	30194.98	-	430.70	228.03	3,026.47	1,585.30
No. Carolina	99,768.88	5581.50	105350.38	3291.44	66,555.66	2,614.68	27307.10	96477.44	17691.53	77989.26	1	189.42	0	3,082.56	6,396.61
So. Carolina	7,731.40	610.00	8341.40	0	1,876.91	43.04	5811.45	7731.40	666.24	7390.16	0	0	0	0(2)	285.00
Tennessee	37,065.71	2439.98	39505.69	1420.38	20,913.34	1,860.87	12871.12	35645.33	11931.94	20652.44	0	5.44	0	4,131.73	2,784.14
Virginia	141,920.82	2762.00	144682.82	9827.55	49,461.88	47,047.90	35583.49	132093.27	27930.03	94188.12	1	452.23	953.74	21,157.70	
W. Virginia	70,252.71	3213.93	73466.64	5795.16	38,646.76	7,945.29	17865.50	64457.55	15519.75	36519.45	2	2278.36	0	19,147.08	
Total	\$454,302.62	20852.41	475155.03	26928.83	231,119.47	61,066.44	135187.88	427373.79	101188.03	294704.99	69	3359.35	1181.77	61,875.93	12,775.96

(1) Up to 1935 inclusive, District Leaders Salary and Expenses for all States, and in South Carolina and Georgia, State leaders salary and expenses were included under Ribes eradication.

(2) Cost of Pre-Eradication Survey not kept separate from Eradication Costs.

State	Number of cases	Number of deaths	Number of recoveries	Number of cases under treatment
Alabama	12	0	12	12
Arkansas	0	0	0	0
California	25	2	23	25
Colorado	0	0	0	0
Connecticut	0	0	0	0
Delaware	0	0	0	0
District of Columbia	0	0	0	0
Florida	24	1	23	24
Georgia	1	0	1	1
Iowa	1	0	1	1
Kansas	0	0	0	0
Kentucky	0	0	0	0
Louisiana	0	0	0	0
Maine	0	0	0	0
Massachusetts	0	0	0	0
Michigan	0	0	0	0
Minnesota	0	0	0	0
Mississippi	0	0	0	0
Missouri	0	0	0	0
Montana	0	0	0	0
Nebraska	0	0	0	0
Nevada	0	0	0	0
New Hampshire	0	0	0	0
New Jersey	0	0	0	0
New Mexico	0	0	0	0
New York	0	0	0	0
North Carolina	0	0	0	0
North Dakota	0	0	0	0
Ohio	0	0	0	0
Oklahoma	0	0	0	0
Oregon	0	0	0	0
Pennsylvania	0	0	0	0
Rhode Island	0	0	0	0
South Carolina	0	0	0	0
South Dakota	0	0	0	0
Tennessee	0	0	0	0
Texas	0	0	0	0
Vermont	0	0	0	0
Virginia	0	0	0	0
Washington	0	0	0	0
West Virginia	0	0	0	0
Wisconsin	0	0	0	0
Wyoming	0	0	0	0
Total	61	3	58	61

(1) This may have included some patients in hospitals.

State	Number of cases	Number of deaths	Number of recoveries	Number of cases under treatment
Alabama	12	0	12	12
Arkansas	0	0	0	0
California	25	2	23	25
Colorado	0	0	0	0
Connecticut	0	0	0	0
Delaware	0	0	0	0
District of Columbia	0	0	0	0
Florida	24	1	23	24
Georgia	1	0	1	1
Iowa	1	0	1	1
Kansas	0	0	0	0
Kentucky	0	0	0	0
Louisiana	0	0	0	0
Maine	0	0	0	0
Massachusetts	0	0	0	0
Michigan	0	0	0	0
Minnesota	0	0	0	0
Mississippi	0	0	0	0
Missouri	0	0	0	0
Montana	0	0	0	0
Nebraska	0	0	0	0
Nevada	0	0	0	0
New Hampshire	0	0	0	0
New Jersey	0	0	0	0
New Mexico	0	0	0	0
New York	0	0	0	0
North Carolina	0	0	0	0
North Dakota	0	0	0	0
Ohio	0	0	0	0
Oklahoma	0	0	0	0
Oregon	0	0	0	0
Pennsylvania	0	0	0	0
Rhode Island	0	0	0	0
South Carolina	0	0	0	0
South Dakota	0	0	0	0
Tennessee	0	0	0	0
Texas	0	0	0	0
Vermont	0	0	0	0
Virginia	0	0	0	0
Washington	0	0	0	0
West Virginia	0	0	0	0
Wisconsin	0	0	0	0
Wyoming	0	0	0	0
Total	61	3	58	61

PERSONNEL

The following technical, supervisory and clerical personnel were under appointment in the calendar year of 1936.

Georgia

W. V. Zimmer - State Leader- Originally appointed May 1934

Carl J. Brookshire - Agent - Appointed - August 22, 1935

T. M. Corn " " August 22, 1935

Maryland

H. E. Yost - State Leader " September 1933

W. M. Morrill - Agent " August 1, 1936
Furloughed October 7, 1936

Daniel W. Norris " Appointed May 1, 1936
Furloughed July 31, 1936

E. R. Porter Appointed April 10, 1936
Resigned October 15, 1936

North Carolina

H. B. Teague State Leader Appointed November 1934

Oscar V. Coulter Agent " Aug. 10, 1936

Lee Roy Etheridge " " May 21, 1936
Resigned Dec. 11, 1936

Mark M. Ferguson " Appointed May 12, 1936

Rowland W. Leiby " Appointed June 4, 1936
Resigned Sept. 18, 1936

Martin L. Nesbitt " Appointed May 21, 1936
Resigned Aug. 31, 1936

H. A. Whitman Appointed Feb. 10, 1936

Note: State Leaders first appointment is recorded above

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PERSONNEL (Continued)

Tennessee

Troy Jones	State Leader	Appointed	Sept. 25, 1935
		Resigned	Oct. 10, 1936
R. Douglas Tanksley	"	Appointed	Sept. 24, 1936
J. Wilburn Lane	Agent	"	May 25, 1936
Pete Stegall	"	"	July 27, 1935

Virginia

Richmond Office

Roy G. Pierce	Pathologist		
L. A. Placek	Chief Clerk	Appointed	August 16, 1935
Mrs. Minnie C. Hudgins	Jr. Clerk	"	Dec. 21, 1935

Charlottesville Office

J. G. Luce, Jr.,	State Leader	Appointed	May 21, 1934
Donald Campbell	Agent	"	Aug. 10, 1936
G. C. Cramer	"	"	July 29, 1936
W. M. Early, Jr.,	"	"	July 29, 1935
J. M. Swecker	"	"	Aug. 8, 1936

West Virginia

Dr. J. M. Ashcroft	- State Leader	Appointed	May 1934
G. C. Hamilton	Agent	"	Sept. 3, 1935
J. W. Kisella	"	"	Sept. 5, 1936
Kermit McKeever	"	"	Sept. 5, 1936
A. E. McNeel	"	"	Sept. 5, 1936
R. W. Welch	"	"	Dec. 2, 1935

to June 30, 1936,
Working as agent
on State payroll since
July 1936

1891-1892
1892-1893

1891-1892	1892-1893	1893-1894	1894-1895
1891-1892	1892-1893	1893-1894	1894-1895
1891-1892	1892-1893	1893-1894	1894-1895
1891-1892	1892-1893	1893-1894	1894-1895

1895-1896
1896-1897

1895-1896	1896-1897	1897-1898	1898-1899
1895-1896	1896-1897	1897-1898	1898-1899
1895-1896	1896-1897	1897-1898	1898-1899
1895-1896	1896-1897	1897-1898	1898-1899

1899-1900
1900-1901

1899-1900	1900-1901	1901-1902	1902-1903
1899-1900	1900-1901	1901-1902	1902-1903
1899-1900	1900-1901	1901-1902	1902-1903
1899-1900	1900-1901	1901-1902	1902-1903

1903-1904
1904-1905

1903-1904	1904-1905	1905-1906	1906-1907
1903-1904	1904-1905	1905-1906	1906-1907
1903-1904	1904-1905	1905-1906	1906-1907
1903-1904	1904-1905	1905-1906	1906-1907

1907-1908
1908-1909
1909-1910

COOPERATION AND COSTS

IN

1 9 3 6

W. P. A. Project

During the calendar year 1936, blister rust control was carried on largely through W. P. A. appropriations which were allotted from time to time to use in the six states of Georgia, Maryland, North Carolina, Tennessee, Virginia. No definite sums were made available for calendar year, but they were made available for the fiscal year 1936 and were added to for the fiscal year 1937. A total of \$336,170.00 was made available for the two fiscal years from W. P. A. funds. Of this sum the various State Leaders reported expending \$175,505.31 in calendar year 1936. Details showing expenditure by States are found in Table IV, of the omnibus Statistical Tables for the District, and in the accompanying Table of allotments since July 1, 1935.

E. C. W. Project

In the four States of Maryland, Tennessee, Virginia and West Virginia, blister rust control was carried on also from CCC Camps with E. C. W. funds. In Maryland and Tennessee this cooperation was quite small, but in Virginia and West Virginia the work from the camps was sustained for a considerable period. A total of \$9,659.85 was reported spent on control from E. C. W.

In Maryland the State E. C. W. crews cooperated in control work on State Forests, working initially 182 acres, at a cost of \$118.00.

In Tennessee the Cherokee National Forest utilized their C. C. C. crews to protect one pine plantation at Tiger Creek. The work was poorly done, and it was supplemented by

work of our W. P. A. crews who found thousands of bushes in the control zone which had been missed by the former. The value of this E. C. W. work was \$18.70.

In Virginia, the work of the National Park Service on Shenandoah National Park and of the National Forests was lessened for 1936, initial eradication having been given in previous years to nearly all of the pine lands. Only \$805.89 was spent in 1936 in Virginia for initial work while \$3882.21 was spent for "reworking". With W. P. A. laborers we carried on considerable work in the George Washington and Jefferson National Forests and in the Shenandoah National Park.

In West Virginia, most of the E. C. W. work was initial except at the Parsons Nursery of the U. S. Forest Service. \$3,129.58 was spent by E. C. W. in 1936 and only \$88.22 for rework outside of Parsons Nursery. \$686.00 was spent in 1936 in Nursery Sanitation in West Virginia, practically all of it by E. C. W. at Parsons

Regular Project

Regular funds were available for expenditure by the Washington Office to the extent of \$ for fiscal year 1936, and \$5,125.00 for fiscal year 1937. \$5,725.77 were reported spent in Maryland, Virginia and West Virginia from regular and cooperative funds provided by the Government. The salary of R. G. Pierce and all expenses for the year for first six months were charged to Virginia.

State and Local Cooperation

Each of the cooperating States cooperated with the federal government in carrying on blister rust. A total of \$8,326.81 was credited the state as their contribution in calendar year 1936. While no appropriations were made available in any of the six Southern Appalachian States; tangible cooperation was given in most states. In Maryland, North Carolina and West Virginia, space or rooms were made available in County buildings. In Virginia space was made available at the University of Virginia. The value of this office space was estimated at \$1,743.00. Detailed tables showing the value and kind of cooperation with each state is appended.

In North Carolina a beginning was made with securing local owners active cooperation. The value of the labor they supplied was estimated at \$152.25. In Virginia the City of Harrisonburg continued to cooperate, expending with one other private owner \$152.00 on eradication.

Agricultural Resettlement Administration (A. R. A)

Only in the State of Maryland did we cooperate with the A. R. A., and here the Cooperation was all on the side of the A. R. A. through failure of the A. R. A. to get in touch with our State Leader until after the eradication work was finished. The A. R. A. worked 185 acres, expending \$323.14. The work was checked by H. E. Yost and R. G. Pierce, and Ribes bushes on private lands immediately adjacent to the A. R. A. pine lot will need to be removed by W. P. A.

Soil Conservation Service

Virginia

In Virginia our agents cooperated with the Soil Conservation Service, and utilized a small crew in Franklin and Henry Counties near the North Carolina line, for locating pine areas and for finding and destroying cultivated currants and gooseberries. This work began in October 1936 and continued through the remainder of the year.

North Carolina

The Soil Conservation Service in North Carolina, headquarters at High Point, in letter of November to Mr. Teague, informed him that the Service was planning on planting white pine in the following seven counties:

<u>Places</u>	<u>County</u>
1	Cleveland
1	Polk
3	Rutherford
1	Guilford
1	Surry

Kentucky

The Soil Conservation Service in Kentucky is planning on planting white pines on two farms near Madison, and on 14 farms in two working areas between Lexington and Covington.

1870

Summary

The first half of the year was very successful in
the sale of the new and improved machine. The
sales were very good and the demand was
very large. The second half of the year was
also very successful. The sales were very good
and the demand was very large.

Financial Statement

The financial statement shows a very good
result. The sales were very good and the
demand was very large. The financial statement
shows a very good result. The sales were very
good and the demand was very large.

Assets

Liabilities

Capital	1000
Reserve	500
Profit	200
Loss	100
Other	100
Total	1800

Conclusion

The conclusion is that the business was very
successful. The sales were very good and the
demand was very large. The financial statement
shows a very good result. The sales were very
good and the demand was very large.

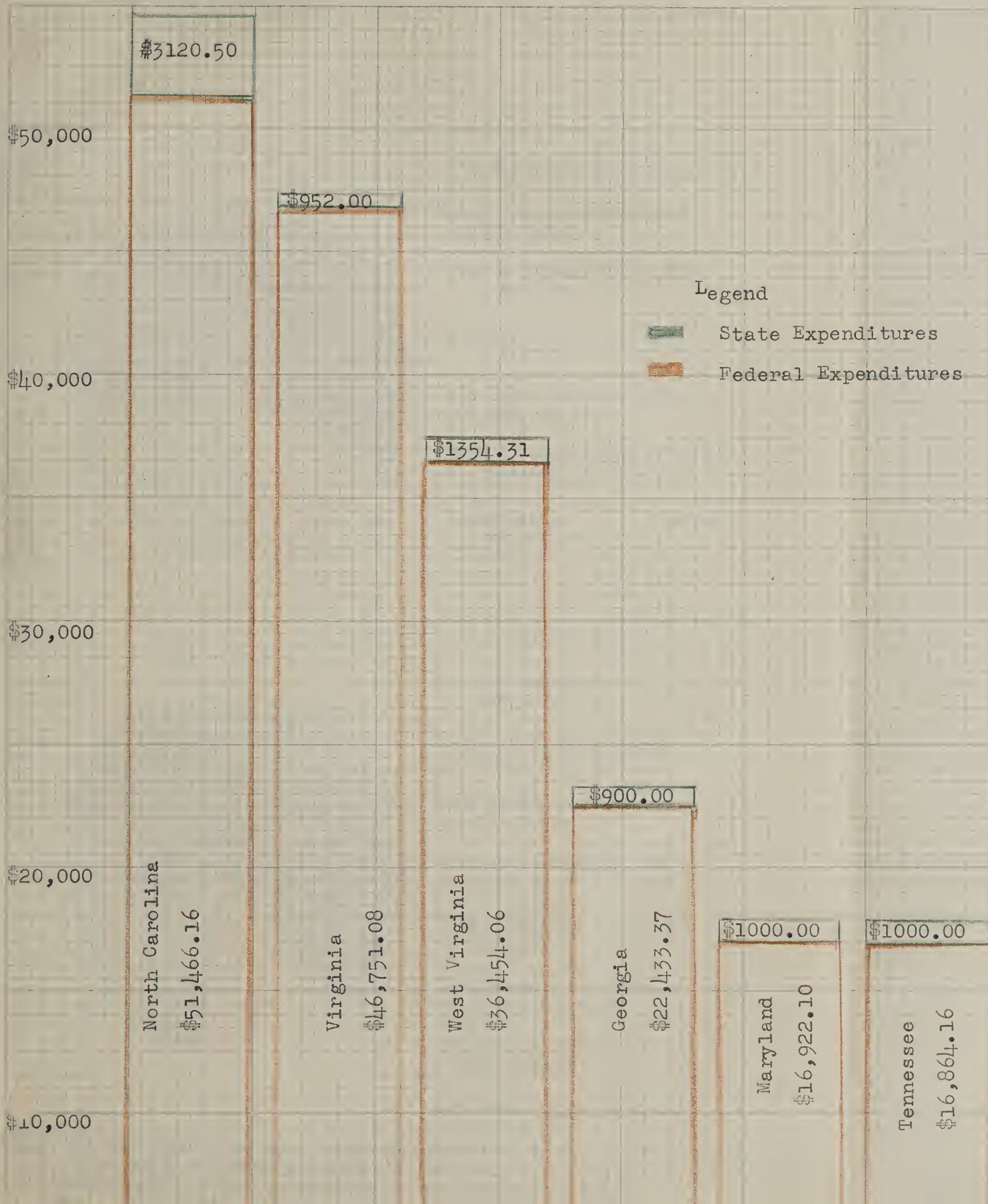
WORKS PROGRESS ADMINISTRATION (WPA)
ALLOTMENTS FOR BLISTER RUST CONTROL FROM JULY 1, 1935 to DECEMBER 31, 1936
AND BALANCE DECEMBER 31, 1936 of BOTH 1935 and 1936 APPROPRIATIONS

	GEORGIA	MARYLAND	NORTH CAROLINA	SOUTH CAROLINA	TENNESSEE	VIRGINIA	WEST VIRGINIA	TOTALS FOR ALL STATES
7/22/35								
1935 Appropriation - Initial allotment	\$23,480.00	\$24,453.00	\$32,515.00	\$2,083.00	\$17,334.00	\$34,525.00	\$26,000.00	\$160,390.00
6/18/36 Reduction	5,280.00	5,000.00	4,000.00	100.00	4,000.00	4,620.00	7,000.00	30,000.00
6/19/36 Remainder	18,200.00	19,453.00	28,515.00	1,983.00	13,334.00	29,905.00	19,000.00	130,390.00
7/8/36 Increase	2,100.00	2,000.00	5,500.00	0	2,700.00	3,450.00	4,450.00	20,200.00
Total 1935 Appropriation	\$20,300.00	\$21,453.00	\$34,015.00	\$1,983.00	\$16,034.00	\$33,355.00	\$23,450.00	\$150,590.00
7/28/36 New Allotment from 1936 Appropriation	4,800.00	3,100.00	17,000.00		4,000.00	10,500.00	14,400.00	53,800.00
8/25/36 Reduction	0	1,200.00	0		2,500.00	0	8,000.00	11,700.00
8/26/36 Remainder	4,800.00	1,900.00	17,000.00		1,500.00	10,500.00	6,400.00	42,100.00
9/15/36 Increase	7,000.00	1,700.00	22,700.00		10,000.00	17,600.00	16,000.00	75,000.00
Total 1936 Appropriation	\$11,800.00	\$3,600.00	\$39,700.00		\$11,500.00	\$28,100.00	\$22,400.00	\$117,100.00
GRAND TOTAL BOTH APPROPRIATIONS	\$32,100.00	\$25,053.00	\$73,715.00	\$1,983.00	\$27,534.00	\$61,455.00	\$45,850.00	\$267,690.00
Balance of 1935 Appropriation on Dec. 31, 1936	119.84	737.86	444.35	66.09	456.03	322.39	356.14	2,502.70
Balance of 1936 Appropriation on Dec. 31, 1936	4,249.19	648.43	5,145.25	0	5,499.35	10,710.78	5,912.15	32,165.15
Total Balance Both Appropriations	\$4,369.03	\$1,386.29	\$5,589.60	66.09	\$5,955.38	\$11,033.17	\$6,268.29	\$34,667.85

RECEIVED BY THE U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
WASHINGTON, D.C. 20246

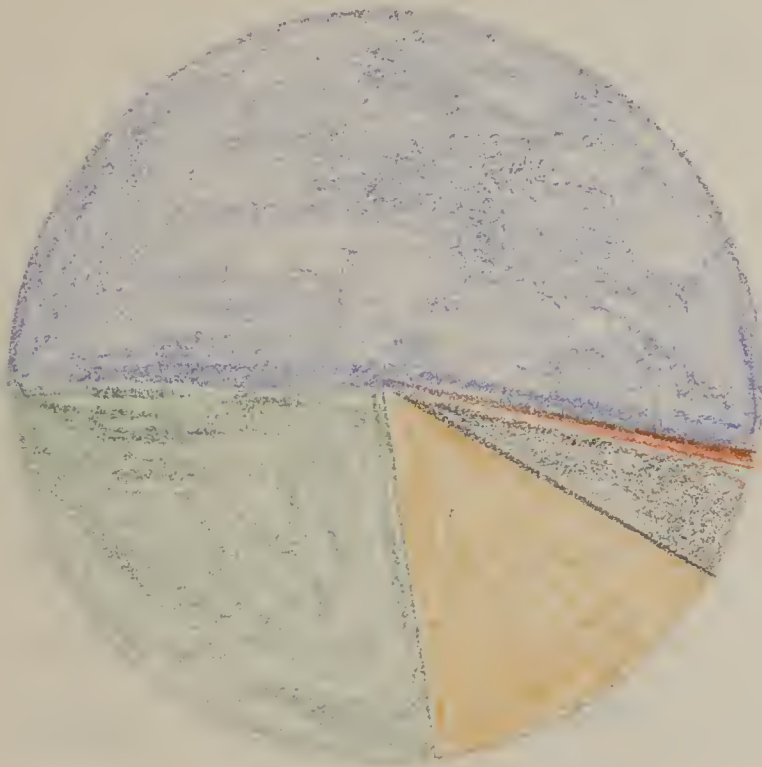
DATE	DESCRIPTION	AMOUNT
7/22/35	1935 Appropriation - Initial allotment	\$32,480.00
8/13/35	Reduction	5,880.00
6/13/36	Remainder	18,300.00
7/3/36	Increase	8,100.00
	Total 1935 Appropriation	\$32,500.00
7/28/36	New allotment from 1935 Appropriation	4,800.00
8/25/36	Reduction	0
8/25/36	Remainder	4,800.00
9/15/36	Increase	7,000.00
	Total 1936 Appropriation	\$11,800.00
	GRAND TOTAL BOTH APPROPRIATIONS	\$32,500.00
	Balance of 1935 Appropriation on Dec. 31, 1936	119.84
	Balance of 1936 Appropriation on Dec. 31, 1936	4,242.16
	Total Balance Both Appropriations	\$4,362.00

Graph showing comparative amounts, Federal and State Expenditures, for All Blister Rust Control in the Southern Appalachian States in Calendar Year 1936.



Graph Showing Relative Amounts Expended for All Blister Rust Control Activities in the Southern Appalachian States, from All Sources

1936



Total Expended \$199,217.74

Ribes Eradication 52.1 %
\$103,712.11

Canker Elimination 0.2%
\$562.13

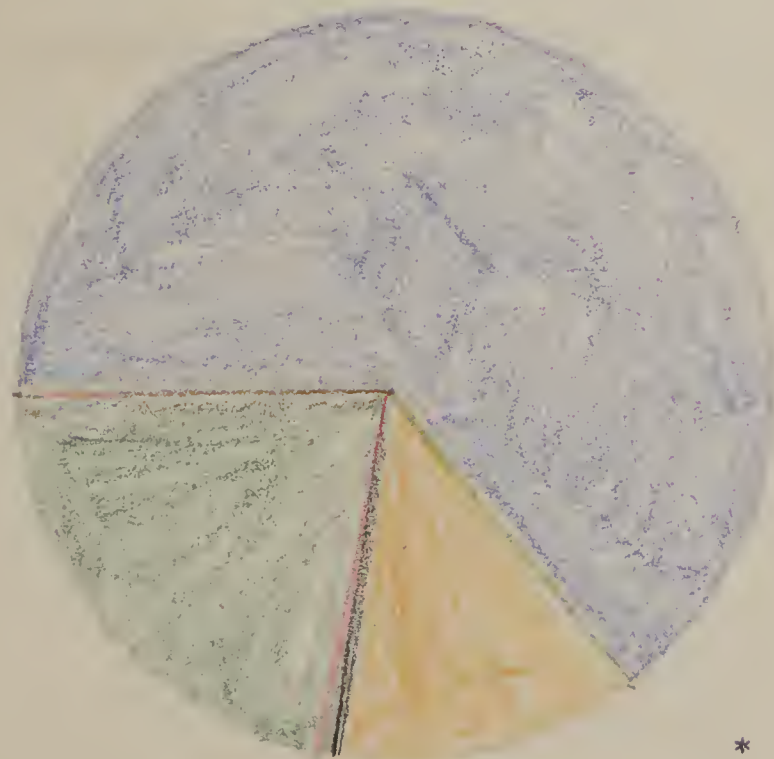
Nursery Sanitation 0.7%
\$1,268.13

All Other Expenses 5.1%
\$10,226.07

Preeradication Survey 14.3%
\$28,532.08

Supervision 27.6%
\$54,917.22

1918 - 1936



Total Expenditures
\$475,155.03

Ribes Eradication 62.1%
\$294,704.99

Preeradication Survey 13.0%
\$61,875.93

Nursery Sanitation .7%
\$3,359.35

Canker Elimination 0.29%
\$1,181.77

Cultivated Black Currant Eradication 0.01%
\$69.00

* Supervision 21.3%
\$101,188.03

All Other Expenses 2.6%
\$12,775.96

Note: Prior to 1936, State Leader's Salary and Expenses in Ga., and So. Carolina and All Agents Salary and Expenses were charged against the Project they were working on, rather than to Supervision which as the practice in 1936.

2. *Chrysomelidae* (beetles)

Chrysomelidae (beetles)

Chrysomelidae (beetles)

Chrysomelidae (beetles)

Chrysomelidae (beetles)

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Chrysomelidae (beetles)

Chrysomelidae (beetles)

Chrysomelidae (beetles)

Chrysomelidae (beetles)

TOTAL P. W. A. EXPENDITURES

SOUTHERN APPALACHIAN STATES
July 1, 1933 to Dec. 31, 1936

Data from Mrs. Hollands
Tabulated Records

	Allotments	Balance	Total Expenditures
Georgia	7,470	126.47	7,343.53
Maryland	22,341	175.09	22,165.91
North Carolina	27,637	329.90	27,307.10
South Carolina	5,851	39.55	5,811.45
Tennessee	13,864	992.88	12,871.12
Virginia	36,455	871.51	35,583.49
West Virginia	17,947	81.50	17,865.50
Kentucky	6,417	177.22	6,239.78
Total	137,982	2,724.12	135,187.88

Copied by

Roy G. Pierce
from Records in
Washington office of
Division of Plant Disease
Control

January 19, 1937

Date		Description		Amount	
1890	Jan 1	Balance		100.00	
	Feb 1	Received from A. B.		50.00	
	Mar 1	Received from C. D.		25.00	
	Apr 1	Received from E. F.		75.00	
	May 1	Received from G. H.		100.00	
	Jun 1	Received from I. J.		150.00	
	Jul 1	Received from K. L.		200.00	
	Aug 1	Received from M. N.		250.00	
	Sep 1	Received from O. P.		300.00	
	Oct 1	Received from Q. R.		350.00	
	Nov 1	Received from S. T.		400.00	
	Dec 1	Received from U. V.		450.00	
	Total			2000.00	

COOPERATION STATE AND PRIVATE

In Calendar Year 1936

Georgia

Supervision State Ent.	Jan. 1 to June 30 1936	July 1, to Dec. 31, 1936	Calendar Year 1936
	\$115.00	\$450.00	\$595.00

Maryland

(Supervision (State & Dist. (Forester Sal. ((and ((Exp. (Office of State (Path. Sup. and (Nurs. Inspection (Salary & Exp. (Office Rent at (Cumberland	\$375.00	\$372.50	\$747.50
	\$ 50.00	\$ 60.00	\$110.00
	\$ 75.00	\$ 67.50	\$142.50
Total	\$500.00	\$500.00	\$1000.00

Alleghany
County
Court House

North Carolina

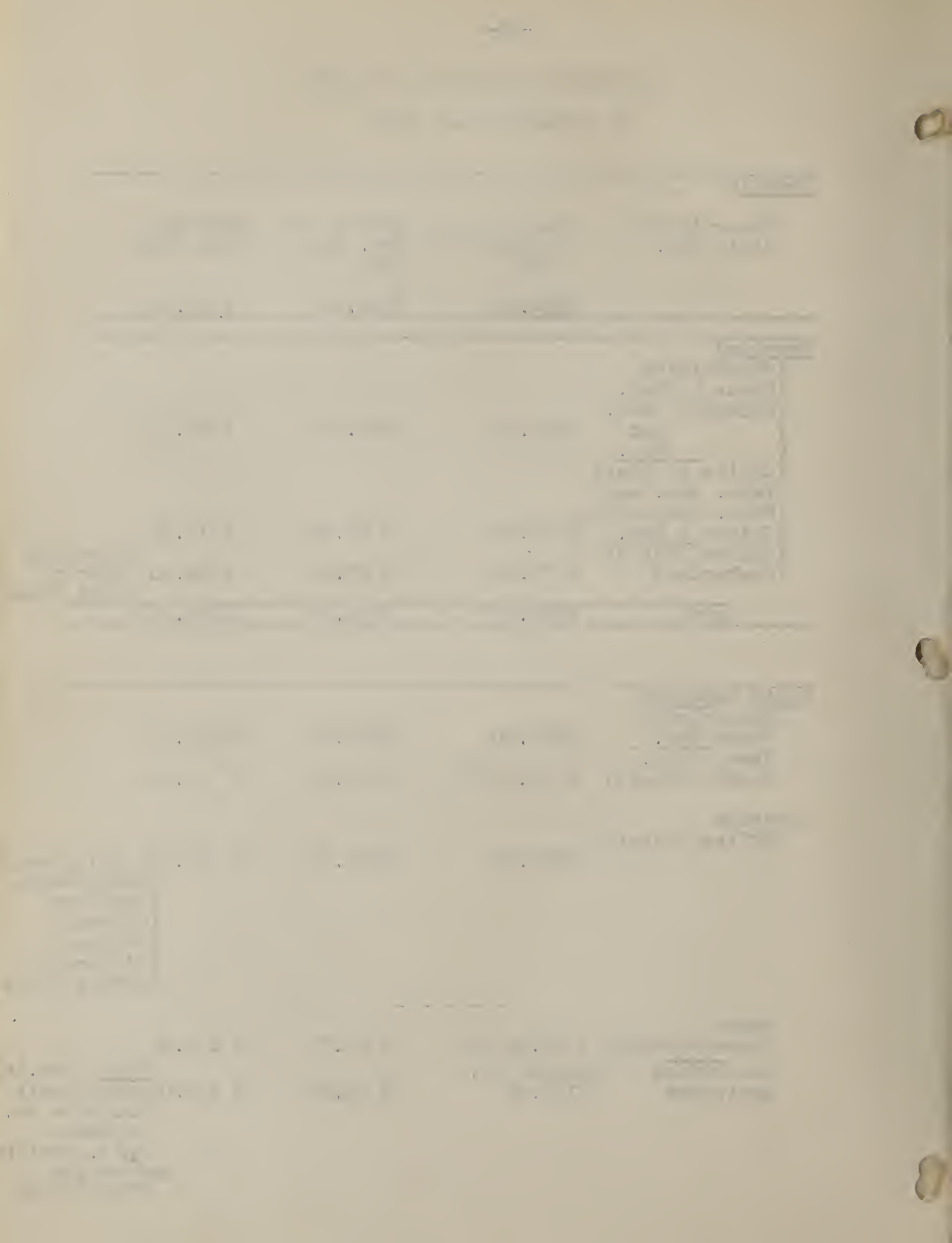
Supervision State Ent.	\$810.00	\$810.00	\$1620.00
Farm. Agts. Supervision(3)	\$ 31.50(3)	\$ 12.00	\$ 43.50

Counties

Office Space(3)	\$201.25	\$739.25	\$ 940.50(Alleghany (Avery, Boone (Buncombe (Caldwell (Madison (Mitchell (Office Space
-----------------	----------	----------	---

Owner Cooperation(4)	\$ 60.50 (7)	\$ 91.75	\$ 152.25
Use Office Equipment	Buncombe Co. \$150.00	\$ 30.00	\$ 180.00

Note: Nos.in
parenthesis
indicate No.
of Farm
Agts.Counties
and Owners
respectively



COOPERATION STATE AND PRIVATE

In Calendar Year 1936

North Carolina
(Continued)

	Jan. 1 to June 30, '36	July 1 to Dec. 31, '36	Calendar Year 1936
City of N. Wilkesboro Office Space		\$ 25.00	\$ 25.00
Total	\$1253.25	\$1,708.00	\$2961.25

Tennessee

Supervision State For'			
Office	\$ 210.00	\$ 210.00	\$420.00
State Ent. Office	60.00	60.00	\$120.00
Employed by State on B.R.C stenographer	\$ 210.00	90.00	\$300.00
Office Equip. furn. by State	\$ 60.00	60.00	120.00
Misc.	\$ 20.02	19.98	40.00
Total	\$560.02	\$ 439.98	\$1000.00

Virginia

Supervision State Forester's			
Office	\$ 90.00	\$ 90.00	\$ 180.00
State Ent.	\$ 90.00	\$ 90.00	\$ 180.00
Office space and Equip. at Charlottesville	\$ 180.00	\$ 180.00	\$ 360.00
Nursery Sanitation	\$40.05	\$ 39.96	\$ 80.01
City Cooper- ation Harrison- burg labor		\$150.00	\$ 150.00
Owners labor		2.00	2.00
Total	\$ 400.05	\$551.96	\$ 952.01

THE HISTORY OF THE
CITY OF BOSTON

From the first settlement of the
English in 1630 to the present time
the city has grown from a small
village to a large metropolis.
The population has increased
from a few hundred to over
one hundred thousand.

The city is situated on a peninsula
between the harbor and the
bay. It is bounded by the
water on three sides and by
the land on the fourth. The
harbor is one of the finest
in the world and the bay is
one of the most beautiful.

The city is the seat of
commerce and industry.
It is the center of the
shipping trade and the
manufacturing industry.
The city is the home of
the great universities and
the most distinguished
institutions of learning.

-17-
COOPERATION STATE AND PRIVATE

In Calendar Year 1936

	Jan. 1 to June 30 1936	July 1 to Dec. 31 1936	Calendar Year 1936
<u>West Virginia</u>			
Supervision Conservation Commission Agri. Dept.	\$ 60.00	\$ 60.00 50.00	\$ 120.00 50.00
Nursery Inspection	\$151.00		151.00
Approp. for salaries B. R. C. Agts Welch, Kissella et al	\$	\$723.31	\$723.31
Office space Pocahontas Co. Marlinton	\$ 150.00	\$150.00	\$300.00
Telephone Service Pocahontas Co. Marlinton	\$ 4.00	\$ 6.00	\$ 10.00
Total W. Va.	\$ 365.00	\$989.31	\$1354.31
<hr/>			
GRAND TOTAL ALL STATES	\$3,223.32	\$4639.25	\$7862.57

STATE OF NEW YORK
IN SENATE
January 10, 1907.

Name		Age		Place of Birth		Education		Occupation	
John A. Smith	1875	32	1875	New York	New York	High School	High School	Teacher	Teacher
James B. Jones	1878	29	1878	New York	New York	High School	High School	Teacher	Teacher
William C. Brown	1880	27	1880	New York	New York	High School	High School	Teacher	Teacher
Robert D. White	1882	25	1882	New York	New York	High School	High School	Teacher	Teacher
Charles E. Black	1884	23	1884	New York	New York	High School	High School	Teacher	Teacher
Thomas F. Green	1886	21	1886	New York	New York	High School	High School	Teacher	Teacher
George H. Hall	1888	19	1888	New York	New York	High School	High School	Teacher	Teacher
Edward I. King	1890	17	1890	New York	New York	High School	High School	Teacher	Teacher
Frank J. Lee	1892	15	1892	New York	New York	High School	High School	Teacher	Teacher
Harold K. Miller	1894	13	1894	New York	New York	High School	High School	Teacher	Teacher
Arthur L. Moore	1896	11	1896	New York	New York	High School	High School	Teacher	Teacher
William M. Taylor	1898	9	1898	New York	New York	High School	High School	Teacher	Teacher
John N. Wilson	1900	7	1900	New York	New York	High School	High School	Teacher	Teacher
Robert O. Young	1902	5	1902	New York	New York	High School	High School	Teacher	Teacher
Charles P. Adams	1904	3	1904	New York	New York	High School	High School	Teacher	Teacher
Thomas Q. Baker	1906	1	1906	New York	New York	High School	High School	Teacher	Teacher

STATE AND PRIVATE COOPERATION

In Calendar Year 1936

By Kind of Cooperation

State	Tangibles				Stenographer ie Assistance	Owner Cities	Cooperation & Persons	State Approp. for Sal. and Wages	Total Tang- ibles	Total All Cooperation
	Office Space	Office Equipment & Telephone								
Georgia	Rented by Department Agriculture		-						0	\$ 595.00
Maryland	\$ 142.50		-						\$ 142.50	\$ 1000.00
No. Carolina	\$ 965.50(1)	180.00	-				152.25		1297.75	\$ 2961.25
Tennessee	Furnished by Fed. Gov.	120.00	300.00						420.00	\$ 1000.00
Virginia	\$ 360.00			150.00			2.00		512.00	\$ 952.01
W. Virginia	\$ 300.00	10.00						723.31	1033.31	\$ 1354.31
Total	\$ 1768.00	\$ 310.00	\$ 300.00	\$ 150.00			\$ 154.25	\$ 723.31	\$ 3405.56	\$ 7,862.57

(1) Office space was provided in 7 different counties in North Carolina for our Agents

STATE AND PRIVATE COOPERATION

In Calendar Year 1936
By Kind of Cooperation

State	Intangibles			
	Supervision			
	State Forester	State Ent. & Nursery Inspection	Other Supervision	Total Supervision
Georgia		\$ 595.00	-	\$ 595.00
Maryland	\$ 747.50	\$ 110.00		\$ 857.50
North Carolina	-	\$ 1620.00	\$43.50	\$ 1663.50
Tennessee	\$ 420.00	\$ 120.00	\$40.00	\$ 580.00
Virginia	\$ 180.00	\$ 260.01		\$ 440.01
West Virginia	\$ 120.00	\$ 201.00		\$ 321.00
Total	\$ 1467.50	\$2,906.01	\$83.50	\$4,457.01

THE UNIVERSITY OF CHICAGO
LIBRARY

RECEIVED			
DATE			
BY			
FOR			
AMOUNT			
REMARKS			
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2098	10	10	10
2099	10	10	10
2100	10	10	10

Counties in Which Blister Rust Control Was Carried on Using
W. P. A. Funds From July 1, 1935 to December 31, 1936

GEORGIA

Local Control - Dawson, Gilmer, Lumpkin, Murray,
Rabun, Stevens, Towns and Union
Counties.

Other Activities
Dawson, Lumpkin, Rabun, Towns, Union

Office Lumpkin

MARYLAND

Local Control Allegany, Baltimore, Frederick, Garrett
and Washington Counties

Survey In addition to above counties, Montgomery,
Prince George, Queen Annes and Wicomico.

Office Allegany

NORTH CAROLINA

Local Control Alexandria, Alleghany, Ashe, Avery
Buncombe, Caldwell, Haywood, Henderson,
Madison, Mitchell, Surry, Watauga, Wilkes

Other Activities
Alexandria, Alleghany, Ashe, Avery
Buncombe, Caldwell, Surry, Watauga and
Wilkes

Office Buncombe

TENNESSEE

Local Control Cumberland, Fentress, Johnson and Morgan

Other Activities Same as Above.

Office Knox

VIRGINIA

Local Control Augusta, Carroll, Floyd, Giles, Grayson
Highland, Madison, Montgomery, Page
Rappahannock, Rockingham Smyth and
Washington Counties.

Other Activities Above Counties and Bland

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WEST VIRGINIA

Local Control Greenbrier, Pendleton and Pocahontas
Counties.

Nursery Sanitation Cabell and Tucker

Office Pocahontas

COUNTIES IN WHICH BLISTER RUST CONTROL WAS CARRIED ON
USING P. W. A. FUNDS (1)

From August 1933 to June 30, 1935
- - - - -

GEORGIA

Control - Fannin, Gilmer, Lumpkin, Murray, Rabun
 Towns, Union

KENTUCKY Control - Lee, Menifee, Morgan, Wolfe,
 Survey - Bath, Breathitt, Estill, Magoffin
 Powell, Rowan

MARYLAND

Control - Allegany, Baltimore, Frederick,
 Garrett, Montgomery, Washington

NORTH CAROLINA

Control - Alexander, Alleghany, Ashe, Avery,
 Buncombe, Burke, Caldwell, Durham,
 Henderson, Jackson, Madison, Mc-Dowell,
 Mitchell, Surry, Transylvania, Watauga
 Wilkes
Survey - Yancey

SOUTH CAROLINA

Control - Greenville, Oconee, Pickens

TENNESSEE

Control- Bledsoe, Carter, Cocke, Cumberland
 Fentress, Johnson, Morgan, Rhea
Survey - Blount, Hamilton, Monroe, Pickett
 Polk, Scott, Sevier
Office - Knox

VIRGINIA

Control- Alleghany, Amherst, Augusta, Bath,
 Bedford, Bland, Botetourt, Carroll
 Clarke, Faquier, Giles, Greene, High-
 land, Loudon, Madison, Nelson, Page
 Pulaski, Rappahonnock, Rockbridge,
 Rockingham, Scott, Warren, Washington
Survey - Bedford, Craig, Fairfax, Floyd, Franklin
 Montgomery, Roanoke, Shenandoah, Smyth
 Tazewell
Office - Albemarle

1. The first part of the document is a letter from the President of the United States to the Congress, dated January 3, 1801.

2. The second part is a report from the Secretary of the Treasury, dated January 10, 1801.

3. The third part is a report from the Secretary of the Navy, dated January 10, 1801.

4. The fourth part is a report from the Secretary of the War, dated January 10, 1801.

5. The fifth part is a report from the Secretary of the Interior, dated January 10, 1801.

6. The sixth part is a report from the Secretary of the State, dated January 10, 1801.

7. The seventh part is a report from the Secretary of the War, dated January 10, 1801.

8. The eighth part is a report from the Secretary of the Navy, dated January 10, 1801.

9. The ninth part is a report from the Secretary of the Treasury, dated January 10, 1801.

10. The tenth part is a report from the Secretary of the State, dated January 10, 1801.

11. The eleventh part is a report from the Secretary of the War, dated January 10, 1801.

12. The twelfth part is a report from the Secretary of the Navy, dated January 10, 1801.

COUNTIES IN WHICH BLISTER RUST CONTROL WAS CARRIED ON
USING P. W. A. FUNDS (1)

From August 1933 to June 30, 1935

- - - - -

(Continued)

WEST VIRGINIA

Control - Greenbrier, Hardy, Pendleton, Pocahontas, Raleigh, Tucker

- (1) Note: If Local Control Work, Ribes Eradication, was carried on in the county, the county is listed under control.
If no Local Control was carried on, but Surveys only, then county is listed under Survey.
If neither local control work or Survey work was carried on in county but office work was carried on, county is listed under office.

THE HISTORY OF THE

REIGN OF KING CHARLES THE FIRST

BY SAMUEL JOHNSON

LONDON

Printed by W. Johnston, at the New York Office, No. 12, NASSAU ST.

1840. The History of the Reign of King Charles the First, by Samuel Johnson, Esq. of the Inner Temple, Barrister at Law. In two Volumes. 8vo. London: Printed by W. Johnston, at the New York Office, No. 12, Nassau St. 1840.

COUNTIES IN WHICH BLISTER RUST CONTROL WAS
CARRIED ON WITH REGULAR FUNDS

In 1935, and 1936

Delaware - Survey - Kent and New Castle

Georgia

Maryland - Office - Allegany County

North Carolina - Office Work - Buncombe County

Tennessee

Virginia Nursery Sanitation - Fairfax County
Office Henrico County

West Virginia
Nursery Sanitation - Cabell County

THE UNIVERSITY OF CHICAGO

DEPARTMENT OF CHEMISTRY

LABORATORY OF ORGANIC CHEMISTRY

CHICAGO, ILL.

RECEIVED

FROM

DATE

BY

REMARKS

TABULAR SUMMARIES, BY STATES
OF ALL CONTROL ACTIVITIES, EXCEPT SURVEYS
FOR 1936
AND FOR THE PERIOD 1918 - 36

TABULAR SUMMARIES OF ALL BLISTER RUST CONTROL ACTIVITIES

The following tables present for each State the Statistical data found in the Omnibus Statistical Tables I to IV and IA to IV A in a preceding section; that is data on

Local Control

Cultivated Black Currant Eradication

Nursery Sanitation

Treatment Infected Pines

Cost Data

and in addition data on

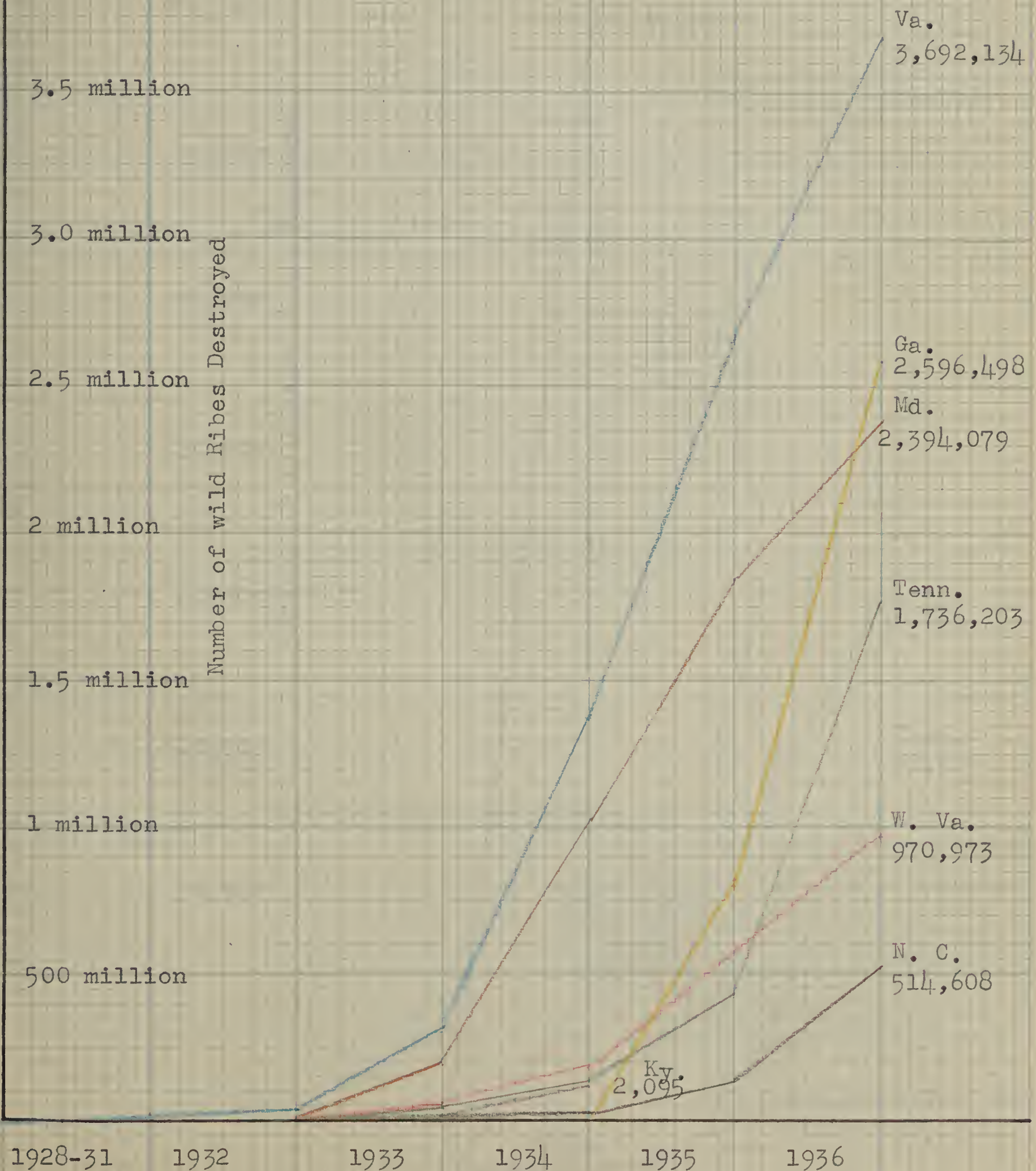
White Pine Acreage

Personnel

Status of Blister Rust

Status of Blister Rust Control

Graph Showing Number of Wild Ribes Destroyed in the Southern Appalachian States By Years 1928-1936 Inclusive
(Total For Region - 11,906,590)



Graph Showing Number of Cultivated
Ribes Destroyed in the Southern
Appalachian States by Years
1928-1936 Inclusive
(Total for Region 717,422)

21
N. C.
549,256

500,000

300,000

100,000

70,000

60,000

50,000

40,000

20,000

10,000

Number of Cultivated Ribes Destroyed

298,607

85,499

Ga.
76,392

Va.
40,815

Tenn.
31,579

S.C.
7,475

Ky
1,830

W.Va. 5,800

Md. 4,268

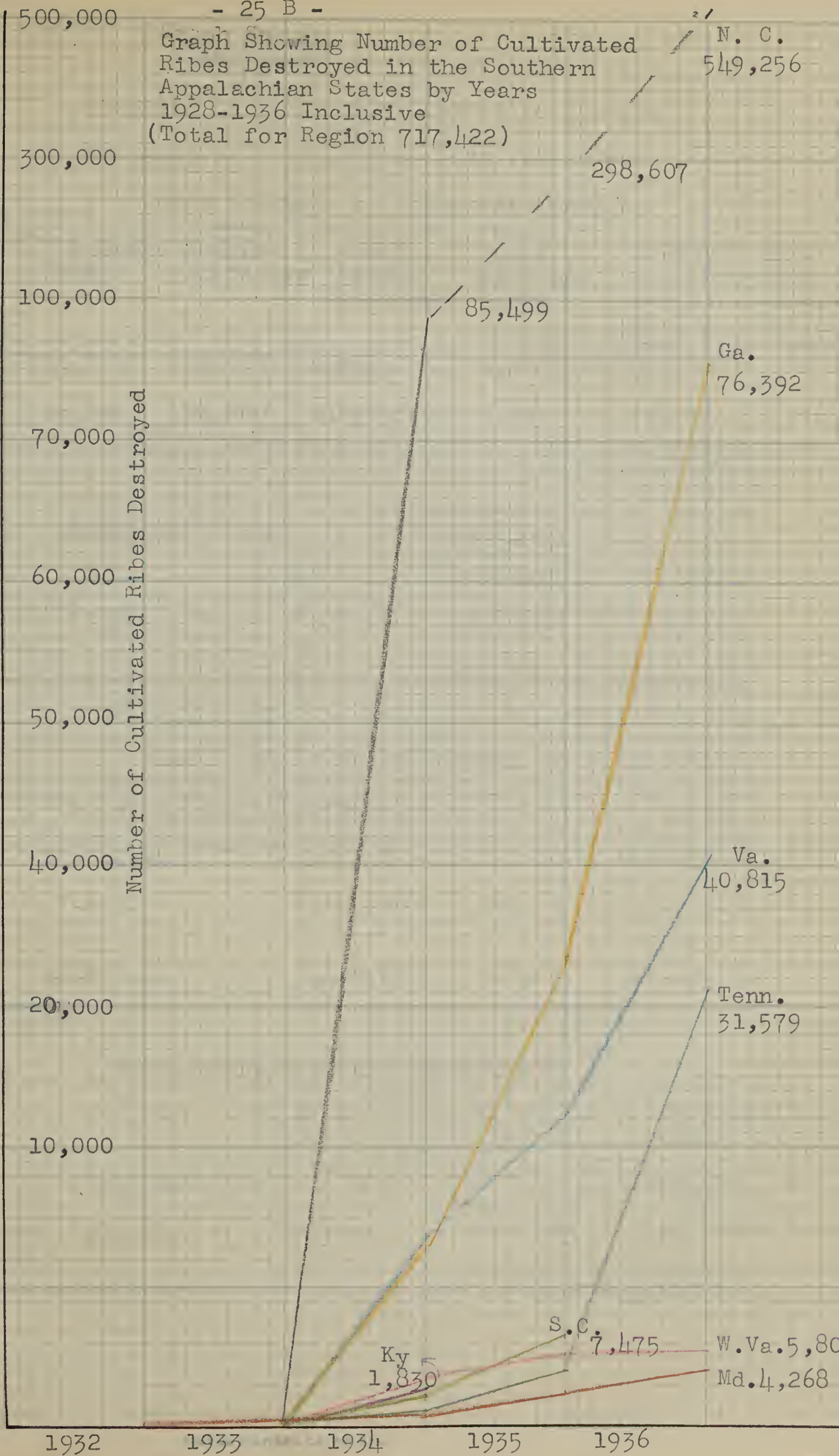
1932

1933

1934

1935

1936





GEORGIA

SUMMARY OF BLISTER RUST CONTROL ACTIVITIES

IN 1936 and From 1933 to 1936 Inclusive

LOCAL CONTROL - RIBES ERADICATION

TABLE 1

Years	Acreage Total	Worked Initially	Total Ribes Destroyed	Total man-days labor	Average no. Ribes per A. on all Lands Wkd.	man- days Labor Per A wkd.
1936	109,105	108,950	1,810,876	3,650	16.5	0.033
1932- 1936	424,415	424,260	2,672,890	7,395	6.27	0.018

TABLE 2 OWNERSHIP OF LAND - ACREAGE WORKED

YEAR	NATION	STATE	PRIVATE	TOTAL
1936	73,655	0	35,450	109,105
1932-1936	214,385	125	209,905	424,415

TABLE 3 TOTAL COST OF LOCAL CONTROL, BY PROJECTS

Year	W. P. A.	P. W. A.	E. C. W.	Total
1936	\$9,050.04	0	0	\$ 9,050.04
1932- 1935	7,603.78	6,489.86	281.66	14,375.30
1932- 1936	16,653.82	6,489.86	281.66	23,425.34

TABLE 4 TOTAL ACREAGE WORKED BY PROJECTS

Year	W. P. A.	P. W. A.	E. C. W.	All Pro- jects
1936	109,105	0	0	109,105
1933-1936 Inclusive	233,227	175,695	15,493	424,415

Continued from page 9

Continued from page 9

Continued from page 9

Date		Description		Amount		Total	
1941	Jan 1	Balance		100.00		100.00	
1941	Jan 15	Deposited		50.00		150.00	
1941	Feb 1	Withdrawal		25.00		125.00	
1941	Mar 1	Deposited		75.00		200.00	
1941	Apr 1	Withdrawal		100.00		100.00	
1941	May 1	Deposited		150.00		250.00	
1941	Jun 1	Withdrawal		50.00		200.00	
1941	Jul 1	Deposited		100.00		300.00	
1941	Aug 1	Withdrawal		75.00		225.00	
1941	Sep 1	Deposited		125.00		350.00	
1941	Oct 1	Withdrawal		100.00		250.00	
1941	Nov 1	Deposited		150.00		400.00	
1941	Dec 1	Withdrawal		100.00		300.00	
1941	Dec 31	Balance		300.00		300.00	

Date		Description		Amount		Total	
1941	Jan 1	Balance		100.00		100.00	
1941	Jan 15	Deposited		50.00		150.00	
1941	Feb 1	Withdrawal		25.00		125.00	
1941	Mar 1	Deposited		75.00		200.00	
1941	Apr 1	Withdrawal		100.00		100.00	
1941	May 1	Deposited		150.00		250.00	
1941	Jun 1	Withdrawal		50.00		200.00	
1941	Jul 1	Deposited		100.00		300.00	
1941	Aug 1	Withdrawal		75.00		225.00	
1941	Sep 1	Deposited		125.00		350.00	
1941	Oct 1	Withdrawal		100.00		250.00	
1941	Nov 1	Deposited		150.00		400.00	
1941	Dec 1	Withdrawal		100.00		300.00	
1941	Dec 31	Balance		300.00		300.00	

Date		Description		Amount		Total	
1941	Jan 1	Balance		100.00		100.00	
1941	Jan 15	Deposited		50.00		150.00	
1941	Feb 1	Withdrawal		25.00		125.00	
1941	Mar 1	Deposited		75.00		200.00	
1941	Apr 1	Withdrawal		100.00		100.00	
1941	May 1	Deposited		150.00		250.00	
1941	Jun 1	Withdrawal		50.00		200.00	
1941	Jul 1	Deposited		100.00		300.00	
1941	Aug 1	Withdrawal		75.00		225.00	
1941	Sep 1	Deposited		125.00		350.00	
1941	Oct 1	Withdrawal		100.00		250.00	
1941	Nov 1	Deposited		150.00		400.00	
1941	Dec 1	Withdrawal		100.00		300.00	
1941	Dec 31	Balance		300.00		300.00	

Date		Description		Amount		Total	
1941	Jan 1	Balance		100.00		100.00	
1941	Jan 15	Deposited		50.00		150.00	
1941	Feb 1	Withdrawal		25.00		125.00	
1941	Mar 1	Deposited		75.00		200.00	
1941	Apr 1	Withdrawal		100.00		100.00	
1941	May 1	Deposited		150.00		250.00	
1941	Jun 1	Withdrawal		50.00		200.00	
1941	Jul 1	Deposited		100.00		300.00	
1941	Aug 1	Withdrawal		75.00		225.00	
1941	Sep 1	Deposited		125.00		350.00	
1941	Oct 1	Withdrawal		100.00		250.00	
1941	Nov 1	Deposited		150.00		400.00	
1941	Dec 1	Withdrawal		100.00		300.00	
1941	Dec 31	Balance		300.00		300.00	

GEORGIA

White Pine Among Deciduous Trees Along Top of
Ridge, South of Tallulah Gorge, Georgia.
Typical of Georgia Situation



Photo 24, Roll¹¹, by Dr. S. B. Fracker

137,314 Acres of White Pine Have Been Initially
Protected in Georgia through the Eradication of
2,672.890 Ribes bushes, since January 1, 1933

THE 28th of 1888

THE 28th of 1888

THE 28th of 1888

THE 28th of 1888

GEORGIA

COST PER ACRE FOR RIBES ERADICATION

TABLE 5

Year	W. P. A.	P. W. A.	E. C. W.	Total
1936	\$0.083	0	0	\$0.083
1932- 1936	0.071	0.036	0.018	0.055

TABLE 6

WHITE PINE ACREAGE

5% and over	Mapped 1933-1936 Inclusive	Protected 1933 - 1936 Inclusive	1936
Under 5%			
Total Acreage	Data not yet available being corrected according to new surveys		

TABLE 7 CONTROL WORK IN NATIONAL FORESTS, BY YEARS

Year	Acreage Worked	Pine Protected	No. of Ribes Destroyed	No. of man-days labor	Cost
1933	8,112	Data	0	no data	\$ 147.90
1934	6,642	not	235	" "	119.01
1935	125,976	available	737,906	2,027	7,308.00
1936	73,655		1,568.586	3,350	6,154.00
Total	214,385		2,306,727	5,377	\$13,728.91

Journal

Wednesday, July 1, 1880

1880	July 1	July 2	July 3	July 4
1880	July 1	July 2	July 3	July 4

Journal

July 5

July 5	July 6	July 7	July 8	July 9
July 5	July 6	July 7	July 8	July 9

Journal

July 10	July 11	July 12	July 13	July 14
July 10	July 11	July 12	July 13	July 14

July 15	July 16	July 17	July 18	July 19
July 15	July 16	July 17	July 18	July 19

July 20	July 21	July 22	July 23	July 24
July 20	July 21	July 22	July 23	July 24

GEORGIA

TABLE 8 STATUS OF CONTROL IN NATIVE STANDS

County	Initial Work	Secondary Working and mop up
Bartow	0 % Complete	
Catoosa	0	
Chatooga	0	
Cherokee	0	
Dade	100	
Dawson	100	
Fannin	60	N O N E
Floyd	0	F O R
Forsyth	0	S T A T E
Gilmer	80	
Gordon	25	
Habersham	100	
Hall	100	
Lumpkin	100	
Murray	25	
Pickens	100	
Rabun	50	
Stephens	100	
Towns	75	
Union	90	
Walker	0	
Whitfield	0	

Date		Description		Amount	
1890		Jan 1		100.00	
		Feb 1		200.00	
		Mar 1		300.00	
		Apr 1		400.00	
		May 1		500.00	
		Jun 1		600.00	
		Jul 1		700.00	
		Aug 1		800.00	
		Sep 1		900.00	
		Oct 1		1000.00	
		Nov 1		1100.00	
		Dec 1		1200.00	
		Total		10000.00	

GEORGIA

TABLE 9 PERSONNEL IN 1936
(Different Persons on the payroll)

Agents	4
Skilled	9
Intermediate	8
Unskilled	<u>91</u>
Total	112

GEORGIA

TABLE 10 Status of Blister Rust in State
None reported to December 31, 1936.

Table 11 Combined Federal and State Expenditures for Blister Rust Control by Years

Activity	1936	1932 -1935 Inclusive	1932-1936 Inclusive
Supervision	\$ 4,383.33	0 (1)	\$ 4,383.33
Ribes Eradication	9,050.04	\$14,375.00	23,425.34
Survey Work	9,000.00	2,330.39	11,330.39
Misc. Sanitation	0	3.20	3.20
B. C. Currant Erad.	0	65.00	65.00
Misc.	900.00	0	900.00
Totals	\$23,333.37	\$16,773.59	\$40,107.26

(1) Up to December 31, 1935, the State Leaders and Agents salaries and expenses were included under one of the other headings.

THEORY OF THE EARTH

1	1000
2	1000
3	1000
4	1000
5	1000
6	1000
7	1000
8	1000
9	1000
10	1000

THEORY OF THE EARTH

THEORY OF THE EARTH

THEORY OF THE EARTH

THEORY OF THE EARTH

1	1000	1000	1000
2	1000	1000	1000
3	1000	1000	1000
4	1000	1000	1000
5	1000	1000	1000
6	1000	1000	1000
7	1000	1000	1000
8	1000	1000	1000
9	1000	1000	1000
10	1000	1000	1000

THEORY OF THE EARTH

THEORY OF THE EARTH

TABLE 12 SUMMARY OF FEDERAL AND STATE EXPENDITURES
FOR BLISTER RUST CONTROL IN GEORGIA

Year	Federal Exp.	State Exp. Including Coop. Funds	Grand Total
1936	\$22,433.37	\$ 900.00	\$23,333.37
1918 to 1936	\$37,754.76	\$2,352.50	\$40,107.26

TABLE 13 CULTIVATED BLACK CURRANT ERADICATION IN GEORGIA

Year	No. of Inspections Made	No. Locations Found	No. of C. B. C Destroyed	No. 8 hour man-days
1936		N O N E		
1918-1936*	19	19	1126*	20

* These black currants may have been all or mostly R. americanum.
No distinction was made by laborers, between R. americanum and
nigrum

TABLE 14 NURSERY SANITATION IN GEORGIA

Year	No. of Nurseries Worked	Acreage in Control Area	No. Ribes Destroyed Wild Culti.	No. 8 hour man-days
1936		N O N E		
1918-1936	1	350	0 8	0.5

TABLE 1. SUMMARY OF DATA FOR THE YEAR 1971

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
1971	10.0	12.0	15.0	18.0	20.0	22.0	25.0	28.0	30.0	32.0	35.0	38.0	300.0
1972	11.0	13.0	16.0	19.0	21.0	23.0	26.0	29.0	31.0	33.0	36.0	39.0	310.0

TABLE 2. SUMMARY OF DATA FOR THE YEAR 1972

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
1972	12.0	14.0	17.0	20.0	22.0	24.0	27.0	30.0	32.0	34.0	37.0	40.0	320.0

TABLE 3. SUMMARY OF DATA FOR THE YEAR 1973

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
1973	13.0	15.0	18.0	21.0	23.0	25.0	28.0	31.0	33.0	35.0	38.0	41.0	330.0

-31-
MARYLAND

SUMMARY OF BLISTER RUST CONTROL ACTIVITIES
In 1936 and From 1932 to 1936 Inclusive

TABLE 1 LOCAL CONTROL - RIBES ERADICATION

Years	Acreage Worked		Total	Total	Total	Average Ribes Per A. on all lands worked
	Total	Initially w. p. pro.	Acrg.	Ribes Destroyed	Labor Man- Days	
1936	30,168	22,281	4,496	543,986	3,613	18
1932- 1936	182,884	155,925	72,006	2,398,347	10,127	13.1

TABLE 2 OWNERSHIP OF LAND - ACREAGE WORKED

Year	Nation	State	Private	Total
1936	185	1,444	28,539	30,168
1932- 1936	185	26,567	156,132	182,884

TABLE 3 TOTAL COST OF LOCAL CONTROL

Year	W.P.A.	E. C. W.	P. W. A.	A.R.A	Reg.	Total
1936	9,762.51	118.00	0	323.14	0	\$10,203.65
1932- 1936	14,958.57	698.00	9,749.71	323.14	26.35	23,456.07

TABLE 4 TOTAL ACREAGE WORKED, BY PROJECTS

Year	W.P.A.	E. C. W.	P.W.A.	A.R.A.	Regular	Total all pro- jects
Year-1936	29,801	182	0	185	0	30,168
1932-1936	48,288	6,175	127,436	185	800	182,884

THE HISTORY OF THE UNITED STATES OF AMERICA

The first part of the history of the United States is the period from the discovery of the continent by Christopher Columbus in 1492 to the establishment of the first permanent settlements. This period is characterized by the exploration of the continent by Spanish, French, and English explorers, and the establishment of the first permanent settlements by the English in 1607.

The second part of the history of the United States is the period from the establishment of the first permanent settlements to the American Revolution in 1776. This period is characterized by the growth of the colonies, the struggle for independence from Britain, and the establishment of the United States as a new nation.

The third part of the history of the United States is the period from the American Revolution to the present. This period is characterized by the growth of the United States as a world power, the struggle for civil rights, and the development of the United States as a modern nation.

The fourth part of the history of the United States is the period from the present to the future. This period is characterized by the continued growth of the United States as a world power, the struggle for civil rights, and the development of the United States as a modern nation.

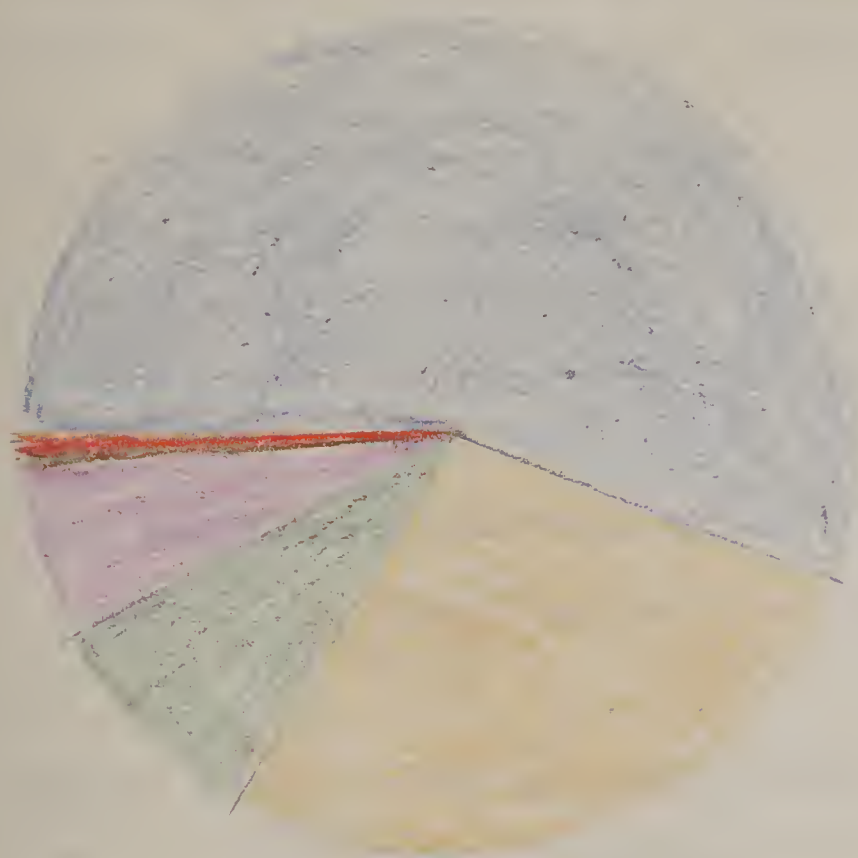
The fifth part of the history of the United States is the period from the future to the present. This period is characterized by the continued growth of the United States as a world power, the struggle for civil rights, and the development of the United States as a modern nation.

The sixth part of the history of the United States is the period from the present to the future. This period is characterized by the continued growth of the United States as a world power, the struggle for civil rights, and the development of the United States as a modern nation.

The seventh part of the history of the United States is the period from the future to the present. This period is characterized by the continued growth of the United States as a world power, the struggle for civil rights, and the development of the United States as a modern nation.

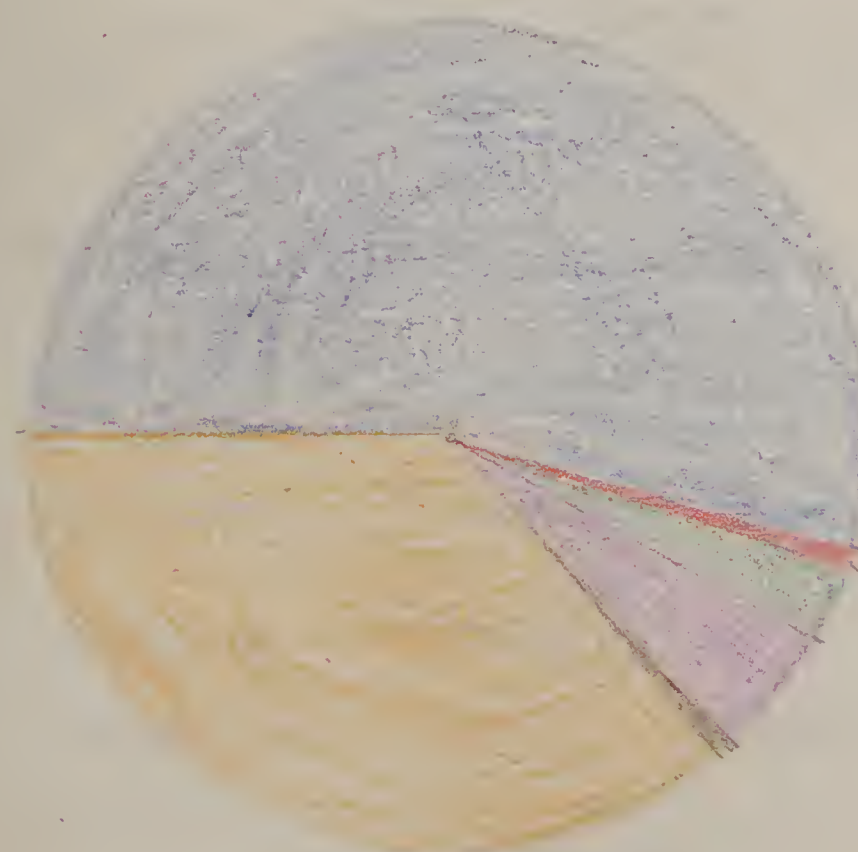
Graphs Showing Amounts Expended for all Blister Rust Control Activities in Maryland from all Sources in 1936, and from 1932 to 1936 inclusive.

1936--Total Expended \$17,922.10



• Ribes Eradication	55.6%
\$9953.65	
• Supervision	27.8%
\$4969.02	
• Miscellaneous	8.8%
\$1585.30	
• Preeradication Survey	5.2%
\$936.10	
• Nursery Sanitation	1.4%
\$250.00	
• Canker Elimination	1.2%
\$228.03	

1918-1936--Total Expended \$55,857.98



• Ribes Eradication	54.0%
\$30,194.98	
• *Supervision	36.5%
\$20,392.50	
• Preeradication Survey	5.5%
\$3026.47	
• Miscellaneous	2.8%
\$1585.30	
• Nursery Sanitation	.8%
\$430.70	
• Canker Elimination	.4%
\$228.03	

*Note all Agents' salaries and expenses were charged against the project on which they were working rather than to Supervision, prior to 1936.

MARYLAND

TABLE 5 COST PER ACRE FOR RIBES ERADICATION

Year	W.P.A.	E. C. W.	P.WA.	A.R.A.	Regular	Total Average of all Eradication
1936	\$0.32	0.648	0	\$1,752	0	\$0.33
1932- 1936	0.31	0.206	0.131	1,752	0.033	0.16

Note:

For additional data see Annual Report for Maryland for 1936
by H. E. Yost, Tables 1 to 22.

TABLE 6 WHITE PINE ACREAGE - Dec. 31, 1936

	Mapped	Protected Initially
5% and over	43,431	42,745
Under 5%	36,794	29,261
Total Acreage	80,225	72,006

TABLE 7 STATUS OF CONTROL IN NATIVE STANDS

Activity	Initial Work Percent Complete	Mop up Work
Allegany	100	100 complete
Baltimore	Complete	"(Lock Raven Pretty Boy Res.)
Frederick	100 Complete	90 complete
Montgomery		No native stands
Garrett	95% Complete	30 complete
Washington	Complete 100	80 % complete

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MARYLAND

TABLE 8 CULTIVATED BLACK CURRANT ERADICATION IN MARYLAND

Year	No. of Inspections Made	No. of Locations Found	No. of C. B. C. Destroyed	No. of 8 hour man-days
1936	NONE			
1918-1936	19	19	1126	20

TABLE 8 a NURSERY SANITATION IN 1936

Year	No. Nurs. having white pine	No. of Nurseries Inspected	Interstate Shipping permit issued	No. white pine in Nursery in State
1936	12	12	8	449,196

TABLE 8 B W. P. A PERSONNEL IN 1936

Agents	4
Skilled	16
Intermediate	38
Unskilled	86
Total	136

Table 1

Table 1 shows the results of the first experiment.

Year	1992	1993	1994	1995	1996
1992	100	100	100	100	100
1993	100	100	100	100	100
1994	100	100	100	100	100
1995	100	100	100	100	100
1996	100	100	100	100	100

Table 2

Year	1992	1993	1994	1995	1996
1992	100	100	100	100	100
1993	100	100	100	100	100
1994	100	100	100	100	100
1995	100	100	100	100	100
1996	100	100	100	100	100

Table 3

1992	100
1993	100
1994	100
1995	100
1996	100

MARYLAND

TABLE 9 A SUMMARY OF RIBES ERADICATION IN MARYLAND ON FEDERAL LANDS

Year	Area	White	Number of Bushes			Man	Cost		
	Worked	Pine Acreage	Wild	Pulled		Days	Total	Per	
	(Acres)	Protected		Cult.	Tot.	Labor		Acre	
		Tot.		Initially					
None prior to 1936									
1936	185	100	100	74,000	0	74,000	149	323.14	\$2.23

TABLE 9B SUMMARY OF RIBES ERADICATION ON STATE LANDS

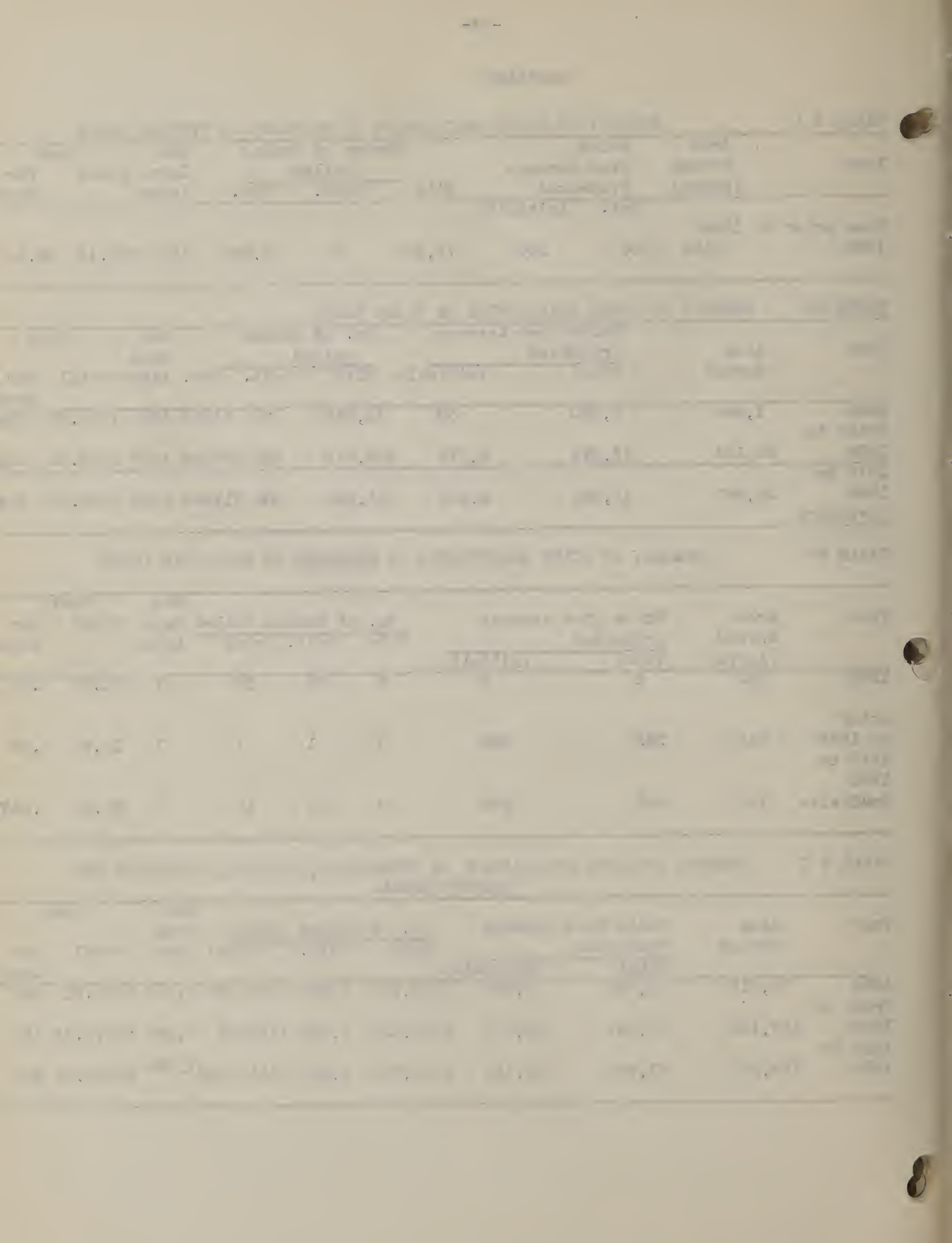
Year	Area Worked	White Pine Acreage		No. of Bushes			Man	Cost	
		Protected		pulled			Days	Total	Per Acre
		Total	Initially	Wild	Cult.	Tot.	Labor		
1936	1,444	5,650	30	14,348	20	14368	400	1200.00	83¢
Prior to									
1936	25,123	12,314	6,379	696,978	580	697558	1897	6165.00	24¢
1918 to									
1936	26,567	17,964	6,409	711,326	600	711926	2297	7365.00	31¢
Inclusive									

TABLE 9C SUMMARY OF RIBES ERADICATION IN MARYLAND ON MUNICIPAL LANDS

Year	Area Worked (Acres)	White Pine Acreage		No. of Bushes Pulled			Man	Cost	Per Acre
		Protected	Initially	Wild	Cult.	Total	Days Labor	Total	
		Total							
1936	320	8	0	0	18	18	7	22.00	.06
prior to 1936	440	353	353	0	1	1	1	13.95	.04
1918 to 1936 Inclusive	760	361	353	0	19	19	8	35.95	.047

TABLE 9 D SUMMARY OF RIBES ERADICATION ON OTHERLANDS, PRIVATE, CORPORATE AND INSTITUTIONAL

Year	Area Worked	White Pine Acreage		No. of Bushes pulled			Man	Cost	
		Protected	Initially	Wild	Cult.	Total	Days Labor	Total	Per Acre
		Total							
1936	28,219	28,219	4,366	455,638	1,258	456,896	3,057	8658.51	30¢
Prior to									
1936	127,153	63,741	60,778	1153,115	2,392	1155507	4,627	14076.33	11¢
1918 to									
1936	155,372	91,960	65,144	1608,753	3,650	1612,403 ^{7,684}		22734.84	14¢



MARYLAND

TABLE 9E SUMMARY OF RIBES ERADICATION IN MARYLAND 1932-1936
BY OWNERSHIP OF LANDS

Owner- ship	Area Worked	White Pine Protected		No. of Bushes Pulled			man- days labor	Total Cost
		Total	Initially	Wild	Culti.	Total		
Federal	185	100	100	74,000	0	74,00	149	\$ 323.14
State	26,567	17,964	6,409	711,326	600	711,926	2297	7,365.00
Municipal	760	361	353	0	19	19	8	35.95
Other lands								
Private	155,372	91,960	65,144	1,608,753	3649	1612,402	7673	22,720.89
Totals	182,884	110,385	72,006*	2,394,079	4268	2398,347	10127	\$30,444.98

* Over 5% pine 42,745 acres, under 5% 29,261 acres.

TABLE 9F STATUS OF BLISTER RUST IN MARYLAND

County	Year Blister Rust First Reported		Reported in 1936
	On White Pine	On Ribes	
Allegany	1934	1931	Prevalent on Ribes and pine
Frederick	1931 ⁽¹⁾	1935	Present on Ribes
Garrett	1934	1933	General on Pine and Ribes
Montgomery	1936	1934	Present on R. nigrum and on l pine
Washington	1931	1931	Present on Ribes

(1) A specimen of pine from Leon Estabrook's plantation showed mycelium resembling that of *Peridermium strobil*. Dr. Metcalf's office, however, would not positively identify the fungus as blister rust.

The following table shows the results of the experiments conducted on the 10th of March 1881.

Time	Temperature	Pressure	Height	Direction
10.00	50.0	30.0	10.0	N. by E.
10.15	50.5	30.1	10.1	N. by E.
10.30	51.0	30.2	10.2	N. by E.
10.45	51.5	30.3	10.3	N. by E.
11.00	52.0	30.4	10.4	N. by E.
11.15	52.5	30.5	10.5	N. by E.
11.30	53.0	30.6	10.6	N. by E.
11.45	53.5	30.7	10.7	N. by E.
12.00	54.0	30.8	10.8	N. by E.
12.15	54.5	30.9	10.9	N. by E.
12.30	55.0	31.0	11.0	N. by E.
12.45	55.5	31.1	11.1	N. by E.
13.00	56.0	31.2	11.2	N. by E.
13.15	56.5	31.3	11.3	N. by E.
13.30	57.0	31.4	11.4	N. by E.
13.45	57.5	31.5	11.5	N. by E.
14.00	58.0	31.6	11.6	N. by E.
14.15	58.5	31.7	11.7	N. by E.
14.30	59.0	31.8	11.8	N. by E.
14.45	59.5	31.9	11.9	N. by E.
15.00	60.0	32.0	12.0	N. by E.
15.15	60.5	32.1	12.1	N. by E.
15.30	61.0	32.2	12.2	N. by E.
15.45	61.5	32.3	12.3	N. by E.
16.00	62.0	32.4	12.4	N. by E.
16.15	62.5	32.5	12.5	N. by E.
16.30	63.0	32.6	12.6	N. by E.
16.45	63.5	32.7	12.7	N. by E.
17.00	64.0	32.8	12.8	N. by E.
17.15	64.5	32.9	12.9	N. by E.
17.30	65.0	33.0	13.0	N. by E.
17.45	65.5	33.1	13.1	N. by E.
18.00	66.0	33.2	13.2	N. by E.
18.15	66.5	33.3	13.3	N. by E.
18.30	67.0	33.4	13.4	N. by E.
18.45	67.5	33.5	13.5	N. by E.
19.00	68.0	33.6	13.6	N. by E.
19.15	68.5	33.7	13.7	N. by E.
19.30	69.0	33.8	13.8	N. by E.
19.45	69.5	33.9	13.9	N. by E.
20.00	70.0	34.0	14.0	N. by E.
20.15	70.5	34.1	14.1	N. by E.
20.30	71.0	34.2	14.2	N. by E.
20.45	71.5	34.3	14.3	N. by E.
21.00	72.0	34.4	14.4	N. by E.
21.15	72.5	34.5	14.5	N. by E.
21.30	73.0	34.6	14.6	N. by E.
21.45	73.5	34.7	14.7	N. by E.
22.00	74.0	34.8	14.8	N. by E.
22.15	74.5	34.9	14.9	N. by E.
22.30	75.0	35.0	15.0	N. by E.
22.45	75.5	35.1	15.1	N. by E.
23.00	76.0	35.2	15.2	N. by E.
23.15	76.5	35.3	15.3	N. by E.
23.30	77.0	35.4	15.4	N. by E.
23.45	77.5	35.5	15.5	N. by E.
24.00	78.0	35.6	15.6	N. by E.
24.15	78.5	35.7	15.7	N. by E.
24.30	79.0	35.8	15.8	N. by E.
24.45	79.5	35.9	15.9	N. by E.
25.00	80.0	36.0	16.0	N. by E.
25.15	80.5	36.1	16.1	N. by E.
25.30	81.0	36.2	16.2	N. by E.
25.45	81.5	36.3	16.3	N. by E.
26.00	82.0	36.4	16.4	N. by E.
26.15	82.5	36.5	16.5	N. by E.
26.30	83.0	36.6	16.6	N. by E.
26.45	83.5	36.7	16.7	N. by E.
27.00	84.0	36.8	16.8	N. by E.
27.15	84.5	36.9	16.9	N. by E.
27.30	85.0	37.0	17.0	N. by E.
27.45	85.5	37.1	17.1	N. by E.
28.00	86.0	37.2	17.2	N. by E.
28.15	86.5	37.3	17.3	N. by E.
28.30	87.0	37.4	17.4	N. by E.
28.45	87.5	37.5	17.5	N. by E.
29.00	88.0	37.6	17.6	N. by E.
29.15	88.5	37.7	17.7	N. by E.
29.30	89.0	37.8	17.8	N. by E.
29.45	89.5	37.9	17.9	N. by E.
30.00	90.0	38.0	18.0	N. by E.
30.15	90.5	38.1	18.1	N. by E.
30.30	91.0	38.2	18.2	N. by E.
30.45	91.5	38.3	18.3	N. by E.
31.00	92.0	38.4	18.4	N. by E.
31.15	92.5	38.5	18.5	N. by E.
31.30	93.0	38.6	18.6	N. by E.
31.45	93.5	38.7	18.7	N. by E.
32.00	94.0	38.8	18.8	N. by E.
32.15	94.5	38.9	18.9	N. by E.
32.30	95.0	39.0	19.0	N. by E.
32.45	95.5	39.1	19.1	N. by E.
33.00	96.0	39.2	19.2	N. by E.
33.15	96.5	39.3	19.3	N. by E.
33.30	97.0	39.4	19.4	N. by E.
33.45	97.5	39.5	19.5	N. by E.
34.00	98.0	39.6	19.6	N. by E.
34.15	98.5	39.7	19.7	N. by E.
34.30	99.0	39.8	19.8	N. by E.
34.45	99.5	39.9	19.9	N. by E.
35.00	100.0	40.0	20.0	N. by E.
35.15	100.5	40.1	20.1	N. by E.
35.30	101.0	40.2	20.2	N. by E.
35.45	101.5	40.3	20.3	N. by E.
36.00	102.0	40.4	20.4	N. by E.
36.15	102.5	40.5	20.5	N. by E.
36.30	103.0	40.6	20.6	N. by E.
36.45	103.5	40.7	20.7	N. by E.
37.00	104.0	40.8	20.8	N. by E.
37.15	104.5	40.9	20.9	N. by E.
37.30	105.0	41.0	21.0	N. by E.
37.45	105.5	41.1	21.1	N. by E.
38.00	106.0	41.2	21.2	N. by E.
38.15	106.5	41.3	21.3	N. by E.
38.30	107.0	41.4	21.4	N. by E.
38.45	107.5	41.5	21.5	N. by E.
39.00	108.0	41.6	21.6	N. by E.
39.15	108.5	41.7	21.7	N. by E.
39.30	109.0	41.8	21.8	N. by E.
39.45	109.5	41.9	21.9	N. by E.
40.00	110.0	42.0	22.0	N. by E.
40.15	110.5	42.1	22.1	N. by E.
40.30	111.0	42.2	22.2	N. by E.
40.45	111.5	42.3	22.3	N. by E.
41.00	112.0	42.4	22.4	N. by E.
41.15	112.5	42.5	22.5	N. by E.
41.30	113.0	42.6	22.6	N. by E.
41.45	113.5	42.7	22.7	N. by E.
42.00	114.0	42.8	22.8	N. by E.
42.15	114.5	42.9	22.9	N. by E.
42.30	115.0	43.0	23.0	N. by E.
42.45	115.5	43.1	23.1	N. by E.
43.00	116.0	43.2	23.2	N. by E.
43.15	116.5	43.3	23.3	N. by E.
43.30	117.0	43.4	23.4	N. by E.
43.45	117.5	43.5	23.5	N. by E.
44.00	118.0	43.6	23.6	N. by E.
44.15	118.5	43.7	23.7	N. by E.
44.30	119.0	43.8	23.8	N. by E.
44.45	119.5	43.9	23.9	N. by E.
45.00	120.0	44.0	24.0	N. by E.
45.15	120.5	44.1	24.1	N. by E.
45.30	121.0	44.2	24.2	N. by E.
45.45	121.5	44.3	24.3	N. by E.
46.00	122.0	44.4	24.4	N. by E.
46.15	122.5	44.5	24.5	N. by E.
46.30	123.0	44.6	24.6	N. by E.
46.45	123.5	44.7	24.7	N. by E.
47.00	124.0	44.8	24.8	N. by E.
47.15	124.5	44.9	24.9	N. by E.
47.30	125.0	45.0	25.0	N. by E.
47.45	125.5	45.1	25.1	N. by E.
48.00	126.0	45.2	25.2	N. by E.
48.15	126.5	45.3	25.3	N. by E.
48.30	127.0	45.4	25.4	N. by E.
48.45	127.5	45.5	25.5	N. by E.
49.00	128.0	45.6	25.6	N. by E.
49.15	128.5	45.7	25.7	N. by E.
49.30	129.0	45.8	25.8	N. by E.
49.45	129.5	45.9	25.9	N. by E.
50.00	130.0	46.0	26.0	N. by E.
50.15	130.5	46.1	26.1	N. by E.
50.30	131.0	46.2	26.2	N. by E.
50.45	131.5	46.3	26.3	N. by E.
51.00	132.0	46.4	26.4	N. by E.
51.15	132.5	46.5	26.5	N. by E.
51.30	133.0	46.6	26.6	N. by E.
51.45	133.5	46.7	26.7	N. by E.
52.00	134.0	46.8	26.8	N. by E.
52.15	134.5	46.9	26.9	N. by E.
52.30	135.0	47.0	27.0	N. by E.
52.45	135.5	47.1	27.1	N. by E.
53.00	136.0	47.2	27.2	N. by E.
53.15	136.5	47.3	27.3	N. by E.
53.30	137.0	47.4	27.4	N. by E.
53.45	137.5	47.5	27.5	N. by E.
54.00	138.0	47.6	27.6	N. by E.
54.15	138.5	47.7	27.7	N. by E.
54.30	139.0	47.8	27.8	N. by E.
54.45	139.5	47.9	27.9	N. by E.
55.00	140.0	48.0	28.0	N. by E.
55.15	140.5	48.1	28.1	N. by E.
55.30	141.0	48.2	28.2	N. by E.
55.45	141.5	48.3	28.3	N. by E.
56.00	142.0	48.4	28.4	N. by E.
56.15	142.5	48.5	28.5	N. by E.
56.30	143.0	48.6	28.6	N. by E.
56.45	143.5	48.7	28.7	N. by E.
57.00	144.0	48.8	28.8	N. by E.
57.15	144.5	48.9	28.9	N. by E.
57.30	145.0	49.0	29.0	N. by E.
57.45	145.5	49.1	29.1	N. by E.
58.00	146.0	49.2	29.2	N. by E.
58.15	146.5	49.3	29.3	N. by E.
58.30	147.0	49.4	29.4	N. by E.
58.45	147.5	49.5	29.5	N. by E.
59.00	148.0	49.6	29.6	N. by E.
59.15	148.5	49.7	29.7	N. by E.
59.30	149.0	49.8	29.8	N. by E.
59.45	149.5	49.9	29.9	N. by E.
60.00	150.0	50.0	30.0	N. by E.

The following table shows the results of the experiments conducted on the 10th of March 1881.

Time	Temperature	Pressure	Height	Direction
10.00	50.0	30.0	10.0	N. by E.
10.15	50.5	30.1	10.1	N. by E.
10.30	51.0	30.2	10.2	N. by E.
10.45	51.5	30.3	10.3	N. by E.
11.00	52.0	30.4	10.4	N. by E.
11.15	52.5	30.5	10.5	N. by E.
11.30	53.0	30.6	10.6	N. by E.
11.45	53.5	30.7	10.7	N. by E.
12.00	54.0	30.8	10.8	N. by E.
12.15	54.5	30.9	10.9	N. by E.
12.30	55.0	31.0	11.0	N. by E.
12.45	55.5	31.1	11.1	N. by E.
13.00	56.0	31.2	11.2	N. by E.
13.15	56.5	31.3	11.3	N. by E.
13.30	57.0	31.4	11.4	N. by E.
13.45	57.5	31.5	11.5	N. by E.
14.00	58.0	31.6	11.6	N. by E.
14.15	58.5	31.7	11.7	N. by E.
14.30	59.0	31.8	11.8	N. by E.
14.45	59.5	31.9	11.9	N. by E.
15.00	60.0	32.0	12.0	N. by E.
15.15	60.5	32.1	12.1	N. by E.
15.30	61.0	32.2	12.2	N. by E.
15.45	61.5	32.3	12.3	N. by E.
16.00	62.0	32.4	12.4	N. by E.
16.15	62.5	32.5	12.5	N. by E.
16.30	63.0	32.6	12.6	N. by E.
16.45	63.5	32.7	12.7	N. by E.
17.00	64.0	32.8	12.8	N. by E.
17.15	64.5	32.9	12.9	N. by E.
17.30	65.0	33.0	13.0	N. by E.
17.45	65.5	33.1	13.1	N. by E.
18.00	66.0	33.2	13.2	N. by E.
18.15	66.5	33		

MARYLAND

TABLE 10 TREATMENT INFECTED PINE

Year	No. Trees Examined	No trees Treated	No. Trees Removed	No. Cankers Removed	No. 8 hr. man days
1936	2,878	1,355	14	6,071	83
1933-35	N O N E				

TABLE 11 COMBINED FEDERAL AND STATE EXPENDITURES IN MAYRLAND BY ACTIVITY

Activity	1936	1918 to 1935	1918 to 1936
Supervision	\$ 4,969.02	\$15,423.48	\$20,392.50
Ribes Eradication	9,953.65	20,241.33	30,194.98
Survey Work	936.10	2,090.37	3,026.47
Nursery Sanitation	250.00	180.70	430.70
Canker Elimination	228.03	0	228.03
Black Currant Erad.	-	-	-
All Other Exp.	1,585.30	0	1,585.30
	\$17,922.10	\$37,935.88	\$55,857.98

TABLE 12 SUMMARY OF FEDERAL AND STATE EXPENDITURES FOR BLISTER RUST CONTROL IN MARYLAND

Year	Federal Expend.	State Exp. Including All Coop. Funds	Grand Total Federal and State
1936	\$16,922.10	\$1,000.00	\$17,922.10
1918-36	52,255.48	3,602.50	55,857.98

Account of the ...

1800

Name		Age		Sex	
John	Smith	25	10	Male	1800
Mary	Smith	22	10	Female	1800
James	Smith	20	10	Male	1800

Name		Age		Sex	
John	Smith	25	10	Male	1800
Mary	Smith	22	10	Female	1800
James	Smith	20	10	Male	1800
Elizabeth	Smith	18	10	Female	1800
William	Smith	15	10	Male	1800
Ann	Smith	12	10	Female	1800
Thomas	Smith	10	10	Male	1800
Isabella	Smith	8	10	Female	1800
Charles	Smith	6	10	Male	1800
Charlotte	Smith	4	10	Female	1800

Account of the ...

Name		Age		Sex	
John	Smith	25	10	Male	1800
Mary	Smith	22	10	Female	1800
James	Smith	20	10	Male	1800

MARYLAND

Forty Acres of Native White Pine, the Emory Lot--Resettlement Administration property at Bittering, Maryland. Cankers have been removed from the stand by Relief Crews.



Photo No. 23, Roll No. 24 by Dr.S.B. Fracker.

72,006 Acres of White Pine have been initially protected (Including 42,745 acres of 5% or more white pine) by the eradication of 2,384,079 wild Ribes and 4,268 cultivated Ribes since 1932.

1875

1876

1877

NORTH CAROLINA

TABLE 1 SUMMARY OF BLISTER RUST CONTROL ACTIVITIES IN 1936 and FROM 1932 to 1936

Years	Local Control		Ribes Eradication			
	Total	Acreage Worked Initially	Total Ribes Destroyed	Total man-days labor	Average No. Ribes per A. on all lands	Avg. Man Day Labor per A. Wkd.
1936	976,673	760,467	702,120	14,536	0.71	.015
1932-35	1200,540	1,185,140	361,744	11,264	0.30	.009
1932-36	2177,213	1,945,607	1,063,864	25,800	0.48	.012

TABLE 2 OWNERSHIP OF LAND - ACREAGE WORKED

Year	Nation	State and Private	Total
1936	29,332	947,341	976,673
1932-35	54,168	1,146,372	1,200,540
1932-36	83,500	2,093,713	2,177,213

TABLE 3 TOTAL COST OF LOCAL CONTROL - BY PROJECTS

Year	W. P. A.	P. W. A.	E. C. W.	Regular	Total
1936		0	0		\$37,668.71
1932-1935	14,779.59	22,925.48	2,614.68		40,319.75
1932-1936	14,779.59	22,925.48	2,614.68		77,988.46

TABLE 4 TOTAL ACREAGE WORKED BY PROJECTS

Year	W. P. A.	P. W. A.	E. C. W.	Regular	Total
1936	971,478	0	0	5,195	976,673
1933-35	241,189	905,183	54,168	0	1,200,540
1932-36	1,212,667	905,183	54,168	5,195	2,177,213

TABLE 5 COST PER ACRE FOR RIBES ERADICATION

Year	W. P. A.	P. W. A.	E. C. W.	Regular	Average All Projects
1936	\$	\$	\$	\$	\$
1933-35	0.06	0.025	0.048	0	0.033
1933-1936	0.06	0.025	0.048	0	0.033

THE FIRST PART OF THE HISTORY OF THE UNITED STATES OF AMERICA

CHAPTER I
THE DISCOVERY OF AMERICA
In the year 1492, Christopher Columbus, an Italian, discovered the continent of America. He was sailing from Spain in search of a westward route to the Indies. On October 12, 1492, he landed on the island of San Salvador, in the West Indies. This event marked the beginning of European settlement in the Americas.

CHAPTER II
THE EARLY SETTLEMENTS
The first permanent European settlement in North America was founded by the Spanish in 1565 at St. Augustine, Florida. Other early settlements were founded by the French, Dutch, and English along the Atlantic coast.

CHAPTER III
THE GROWTH OF THE COLONIES
The colonies grew in number and size as more settlers arrived from Europe. The colonies developed their own laws and customs, and began to assert their independence from England.

CHAPTER IV
THE STRUGGLE FOR INDEPENDENCE
The colonies fought a war of independence against England from 1775 to 1783. The war resulted in the colonies becoming the United States of America.

CHAPTER V
THE CONSTITUTION
The United States adopted a Constitution in 1787, which established the framework of the federal government. The Constitution has since been amended several times to adapt to the needs of the country.

NORTH CAROLINA

TABLE 6 WHITE PINE ACREAGE, December 31, 1936

Total Estimated Ownership in State	Protected
847,546	427,094 acres

TABLE 7 SUMMARY OF NURSERY SANITATION

Year	No. Nurs. Worked	Acreage in Nursery Control Area	No. Ribes Destroyed		No. 8 hour man-days
			Wild	Cultivated	
1936	0	0	0	0	0
1933-1935	8	930	3,515	409	133.5

TABLE 8 CULTIVATED BLACK CURRANT ERADICATION

Year	No. Inspections Made	No. Locations Found	No. C. B.C. Destroyed	No. 8 hour man-days
1936	0	0	0	0
1933-1935	2	2	3	0.25

TABLE 9 STATUS OF BLISTER RUST IN STATE TO DEC. 31, 1936
None Yet Reported

TABLE 10 W. P. A PERSONNEL IN 1936

Agents	6
Skilled	16
Intermediate	13
Professional	6
Unskilled	202
Total	<u>243</u>

1. The first part of the paper is devoted to a discussion of the general principles of the theory of the structure of the atom.

2. In the second part, we shall consider the question of the influence of the external magnetic field on the atomic structure.

3. The third part of the paper is devoted to a discussion of the question of the influence of the external electric field on the atomic structure.

4. In the fourth part, we shall consider the question of the influence of the external magnetic field on the atomic structure.

5. The fifth part of the paper is devoted to a discussion of the question of the influence of the external electric field on the atomic structure.

6. In the sixth part, we shall consider the question of the influence of the external magnetic field on the atomic structure.

7. The seventh part of the paper is devoted to a discussion of the question of the influence of the external electric field on the atomic structure.

8. In the eighth part, we shall consider the question of the influence of the external magnetic field on the atomic structure.

9. The ninth part of the paper is devoted to a discussion of the question of the influence of the external electric field on the atomic structure.

10. In the tenth part, we shall consider the question of the influence of the external magnetic field on the atomic structure.

11. The eleventh part of the paper is devoted to a discussion of the question of the influence of the external electric field on the atomic structure.

12. In the twelfth part, we shall consider the question of the influence of the external magnetic field on the atomic structure.

13. The thirteenth part of the paper is devoted to a discussion of the question of the influence of the external electric field on the atomic structure.

14. In the fourteenth part, we shall consider the question of the influence of the external magnetic field on the atomic structure.

15. The fifteenth part of the paper is devoted to a discussion of the question of the influence of the external electric field on the atomic structure.

NORTH CAROLINA

TABLE 11 COMBINED FEDERAL AND STATE EXPENDITURES IN
NORTH CAROLINA BY ACTIVITY

Activity	1936	1918 to 1935	1918 to 1936
Supervision	\$ 8,649.36	\$ 9,042.17	\$ 17,691.53
Ribes Eradication	37,668.71	40,320.55	77,989.26
Culti. Bl. Cur.Erad.	0	1.00	1
Nurs. Sanitation Sur.	189.42	0	189.42
Preeradication	1,682.56	1,400.00	3,082.56
All Other Expenses	6,396.61	0	6,396.61
	\$ 54,586.66	\$ 50,763.72	\$ 105,350.38

TABLE 12 SUMMARY OF FEDERAL AND STATE EXPENDITURES FOR
BLISTER RUST CONTROL

year	Federal	State Including All Coop. Funds	Grand Total
1936	51,466.16	3,120.50	54,586.66
1918 to 1936	99,768.88	5,581.50	105,350.38

1. The first part of the report deals with the general situation of the country. It is a very interesting and informative study of the country's development. The author has done a great deal of research and has gathered a wealth of material. The report is well written and is easy to read. It is a valuable contribution to the study of the country's development.

2. The second part of the report deals with the economic situation of the country. It is a very interesting and informative study of the country's economic development. The author has done a great deal of research and has gathered a wealth of material. The report is well written and is easy to read. It is a valuable contribution to the study of the country's economic development.

3. The third part of the report deals with the social situation of the country. It is a very interesting and informative study of the country's social development. The author has done a great deal of research and has gathered a wealth of material. The report is well written and is easy to read. It is a valuable contribution to the study of the country's social development.

4. The fourth part of the report deals with the political situation of the country. It is a very interesting and informative study of the country's political development. The author has done a great deal of research and has gathered a wealth of material. The report is well written and is easy to read. It is a valuable contribution to the study of the country's political development.

5. The fifth part of the report deals with the cultural situation of the country. It is a very interesting and informative study of the country's cultural development. The author has done a great deal of research and has gathered a wealth of material. The report is well written and is easy to read. It is a valuable contribution to the study of the country's cultural development.

6. The sixth part of the report deals with the environmental situation of the country. It is a very interesting and informative study of the country's environmental development. The author has done a great deal of research and has gathered a wealth of material. The report is well written and is easy to read. It is a valuable contribution to the study of the country's environmental development.

7. The seventh part of the report deals with the international situation of the country. It is a very interesting and informative study of the country's international development. The author has done a great deal of research and has gathered a wealth of material. The report is well written and is easy to read. It is a valuable contribution to the study of the country's international development.

8. The eighth part of the report deals with the future of the country. It is a very interesting and informative study of the country's future development. The author has done a great deal of research and has gathered a wealth of material. The report is well written and is easy to read. It is a valuable contribution to the study of the country's future development.

NORTH CAROLINA

TABLE 13 CONTROL WORK IN NATIONAL FORESTS OF NORTH CAROLINA BY YEARS

Year	Acreage Worked	Area pine Protected	No. of Ribes Destroyed	Man-Days Labor	Cost
1933 (3)	27,560	14,876 (1)	227	403	\$1,627.65
1934(3)	24,598	8,801 (2)	269	155	786.20
1935	0	0	0	0	0
1936 (4)	29,332	2,388	2,893	160	474.08
	81,490	26,065	3,389	718	\$2,887.93

- (1) 1933 Work (Pisgah National Forest 5,176 Acres Pine Protected
(Nantahala " " 9,700 " " ")
- (2) 1934 Work was all on the Pisgah National Forest
- (3) Work in 1933 and 1934 was paid for by E. C. W.
- (4) Work in 1936 was conducted by a blister rust control foreman and paid for by W. P. A.

TABLE 14 CONTROL WORK IN NATIONAL PARKS OF NORTH CAROLINA BY YEARS

Year	Acreage Worked	Area Pine Protected	No. of Ribes Destroyed	Man-Days Labor	Cost
1933	2,010	2,010	133	12	\$200.83

TABLE 15 CONTROL WORK IN NATIONAL LANDS OF NORTH CAROLINA

Unit	Acreage Worked	Area white pine protected	No. of Ribes Destroyed	Man-Days Labor	Cost
National Forests	81,490	26,065	3,389	718	\$2,887.93
National Parks	2,010	2,010	133	12	200.83
Totals	83,500	28,075	3,522	730	\$3,088.76

1. The first part of the document is a letter from the President of the United States to the Congress, dated January 1, 1861.

2. The second part is a report from the Secretary of the Interior, dated January 1, 1861, on the state of the public lands.

3. The third part is a report from the Secretary of the Treasury, dated January 1, 1861, on the state of the public debt.

4. The fourth part is a report from the Secretary of the War, dated January 1, 1861, on the state of the military forces.

5. The fifth part is a report from the Secretary of the Navy, dated January 1, 1861, on the state of the naval forces.

6. The sixth part is a report from the Secretary of the Department of the Interior, dated January 1, 1861, on the state of the public lands.

7. The seventh part is a report from the Secretary of the Department of the Treasury, dated January 1, 1861, on the state of the public debt.

8. The eighth part is a report from the Secretary of the Department of the War, dated January 1, 1861, on the state of the military forces.

9. The ninth part is a report from the Secretary of the Department of the Navy, dated January 1, 1861, on the state of the naval forces.

10. The tenth part is a report from the Secretary of the Department of the Interior, dated January 1, 1861, on the state of the public lands.

11. The eleventh part is a report from the Secretary of the Department of the Treasury, dated January 1, 1861, on the state of the public debt.

TENNESSEE

SUMMARY OF BLISTER RUST CONTROL ACTIVITIES IN 1936 and FROM 1933 to 1936 INCLUSIVE

Table 1		Local Control		- Ribes Eradication		
Year	Acreage Total	Worked Initially	Total Acreage White Pine Protected	Total Ribes Destroyed	Total Labor Man-Days	Average No. Ribes per Acre of All Lands
1936	102,443	100,515	12,808 #	1,315,138	4,757.9	12.8
1933-36 Incl.	263,398	260,591	53,400	1,767,782	8,020.	6.7

Table 2		Ownership of Lands		Acreage Worked	
Year		National		State and Private	Total
1936		860		101,583	102,443
1933-36 Incl.		23,550		239,848	263,398

Table 3		Total Cost of Local Control, By Projects.		
Year		W. P. A.	P. W. A.	E. C. W.
1936		\$ 8,158.32	0	\$ 18.70
1933-36 incl.		\$10,159.61	\$8,650.96	\$1860.87

Table 4		Total		Acreage Worked by Projects	
Year		W. P. A.		P. W. A.	E. C. W.
1936		10,263		0	180
1933-36 Incl.		117,702		122,340	23,356

TABLE 5		Cost Per Acre for Ribes Eradication		
Year		W. P. A.	P. W. A.	E. C. W.
1936		\$0.08	\$ 0	\$0.104
1933-36 Incl.		0.086	0.070	0.079

Estimated

TABLE 1

Year	Total	Initial	Final
1933-34 incl.	100,000	100,000	100,000
1934	100,000	100,000	100,000

Year	Total	Initial	Final
1933-34 incl.	100,000	100,000	100,000
1934	100,000	100,000	100,000

Year	Total	Initial	Final
1933-34 incl.	100,000	100,000	100,000
1934	100,000	100,000	100,000

Year	Total	Initial	Final
1933-34 incl.	100,000	100,000	100,000
1934	100,000	100,000	100,000

Year	Total	Initial	Final
1933-34 incl.	100,000	100,000	100,000
1934	100,000	100,000	100,000

TENNESSEE

SUMMARY OF BLISTER RUST CONTROL ACTIVITIES IN 1936 and FROM 1935 to 1936

Table 6	Control Work in National Forests by Years				
	Acreage Worked	Pine Protected	No. of Ribes Destroyed	No. of Man-Days Labor	Cost
1933	8,895	4,107	62,856	no data	848.68
1934	11,970	5,936	185	216	633.44
1935	0		0	0	0
1936	860	108 #	261,930	89.2	120.22
Total	21,725	10,151	324,971	305.2	\$1602.34

Estimated#

Ribes per Acre on National Forest 1933 - 1936 - 14.9

Cost per Acre on National Forest 1933 - 1936 0.073

Man-Days Labor per Acre on National Forest 1934 - 1936 0.024

Table 7	Control Work in National Parks, By Years				
	Acreage Worked	Pine Protected	No. of Ribes Destroyed	No. of Man-Days Labor	Cost
1933	1,825	1,825	16	no data	\$200.15
1934 - 1936 Inclusive	0	0	0	0	0.

-42-
TENNESSEE

TABLE 8 SUMMARY OF WHITE PINE AREAS PROTECTED INITIALLY
FROM BLISTER RUST, BY OWNERSHIP AND YEAR(In Acreage)

Year	National Forests	National Park	Total Federal Lands	Private and State	Total white pine Areas
1933	4,107	1,825	5,932	0	5,932
1934	5,936	0	5,936	22,567	28,503
1935	0	0	0	6,157	6,157
1937	108*	0	108	12,700*	12,808*
Totals	10,151	1,825	11,976	41,424	54,400

* Estimated on basis of 1 acre of pine to 8 acres worked, the same ratio as in 1935. Resurveys now being made will likely increase this white pine acreage.

TABLE 9 NURSERY SANITATION IN TENNESSEE

Year	No. of Nurs. Worked	No. of white pine in nursery	No. of Acres Worked	No. of Ribes Destroyed Wild	No. 8 Culti. man-days
1936	0	550(1)	0	0	0
1933-1936	1	550	550	0	0

(1) At Bledsoe State Forest Nursery, there was a stand failure in the numerous white pine seed beds.

TABLE 10 CULTIVATED BLACK CURRANT ERADICATION FOR 1918-1936
N O N E

TABLE 11 STATUS OF BLISTER RUST CONTROL IN TENNESSEE

NONE REPORTED

TABLE 12 W. P. A PERSONNEL IN TENNESSEE

Agents	6	Skilled	13
Clerks and Stenographer	2	Intermediate	1
Professional	0	Unskilled	130
			<u>152</u>

THE UNIVERSITY OF CHICAGO

DEPARTMENT OF CHEMISTRY

RESEARCH REPORT

NO. 100

BY

DR. J. H. HARRIS

AND

DR. R. M. HARRIS

CHICAGO, ILLINOIS

1950

THE UNIVERSITY OF CHICAGO

DEPARTMENT OF CHEMISTRY

RESEARCH REPORT

NO. 101

BY

DR. J. H. HARRIS

AND

DR. R. M. HARRIS

CHICAGO, ILLINOIS

1950

THE UNIVERSITY OF CHICAGO

DEPARTMENT OF CHEMISTRY

RESEARCH REPORT

NO. 102

BY

DR. J. H. HARRIS

AND

DR. R. M. HARRIS

TENNESSEE

TABLE 13 COMBINED FEDERAL AND STATE EXPENDITURES
BY ACTIVITIES, IN TENNESSEE

Activity	1936	1918 to 1936 Inclusive
Supervision	\$5,519.07	\$11,931.94
Ribes Eradication	8,158.32	20,652.44
Survey Work	2,842.61	4,131.73
Nursery Sanitation	0	5.44
Cultivated Black Currant	0	0
All Other Expenses	1,344.16	2,784.14
	<u>\$17,864.16</u>	<u>\$39,505.69</u>

TABLE 14 SUMMARY OF FEDERAL AND STATE EXPENDITURES
FOR BLISTER RUST IN TENNESSEE

Year	Federal Expenditures	State Expenditures Including all Coop. Funds	Grand Total
1936	16,864.16	\$ 1,000.00	\$17,864.16
1918-1936	37,065.71	2,439.98	39,905.69

MEMORANDUM

MEMORANDUM FOR THE RECORD
SUBJECT: [Illegible]

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MEMORANDUM FOR THE RECORD
SUBJECT: [Illegible]

[Illegible text block containing several lines of a memorandum body]

TABLE 15 STATUS OF CONTROL IN NATIVE STANDS BY DECEMBER 31, 1936.

<u>Activity</u>	<u>Initial Work Percent Complete</u>	<u>Second Working Percent Complete</u>
Bledsoe	100% down to 10% pine	0
Blount	100% " " 10% pine	0
Campbell	0	0
Carter	Estimated 80% above 5%	0
Cocke	100% outside National Lands	0
Cumberland	25%	0
Fentress	Estimated 50% above 10%	0
Greene	None	0
Hamilton	100% down to 10% pine	0
Johnson	(100% down to 5% pine on Nat'l Lands · 20% (75% down to 5% pine on Private "	
Monroe	100% down to 10% pine on Private " 0	
Morgan	90% down to 2% pine	0
Pickett	25% down to 10% pine	0
Polk	100% down to 10 pine outside of National Forest	0
Rhea ·	100% down to 10% pine	0
Scott	100% down to 10% pine	0
Sevier	100% down to 10% pine and 10 Acre lots	0
Sullivan	100% on National Forest down to 5% on State and Private Land	0
Unicoi	0%	0
Washington	0%	

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VIRGINIA

SUMMARY OF BLISTER RUST CONTROL ACTIVITIES IN 1936
AND FROM 1928 to 1936 INCLUSIVE

TABLE 1		LOCAL CONTROL		- RIBES ERADICATION		
Years	Acreage Worked		Total Acreage wh. pine protected	Total Ribes Destroyed	Total man-days labor	Average no. Ribes per Acre on all lands
	Total	Initially				
1936	107,952	101,047	29,998	1,028,636	12,333	9.53
1928-35	231,247	223,537	54,309	2,704,313	28,461	11.64
1928-36	339,199	324,584	84,307	3,732,949	40,794	10.98

TABLE 2		OWNERSHIP OF LAND	ACREAGE WORKED	
Year	Nation	State and Private	Total	
1936	20,656	87,296	107,952	
1928-35 Inclusive	52,501	178,746	231,247	
1928-36	73,157	266,042	339,199	

TABLE 3		TOTAL COST OF LOCAL CONTROL, BY PROJECTS			
Year	W. P. A.	P. W. A.	E. C. W.	Regular	Total
1936	\$16,184.29	\$ 0	\$ 4,688.10	\$152.00	\$21,024.39*
1928					
1935 incl.	7,735.51	26,465.31	37,423.49	739.42	72,363.73
1928-1936					
inclusive	\$23,919.80	\$26,465.31	\$42,111.59	\$891.42	\$93,388.12
*This is \$800 less than amount shown in statistical summary of Distribution due to wrong inclusion in latter of supervision of state as Eradication					

TABLE 4					
TOTAL ACREAGE WORKED, BY PROJECTS					
Year	W. P. A.	P. W. A.	E. C. W.	Regular	Total
1936	104,360	0	2,992	600	107,952
1928 to					
1935	41,379	124,400	55,842	9,626	231,247
1928-1936	145,739	124,400	58,834	10,226	339,199

TABLE 5		COST PER ACRE FOR RIBES ERADICATION			
year	W. P. A.	P. W. A.	E. C. W.	Regular	Total
1936	\$0.155	\$ 0	\$ 1.23	\$0.253	\$0.202
Average for					
1928-35 incl	0.187	0.213	0.666	0.086	0.313
Average for					
1928-36	0.167	0.213	0.718	0.087	0.238
Inclusive					

STATE OF NEW YORK

IN SENATE

JANUARY 18, 1894

REPORT OF THE

COMMISSIONERS OF THE LAND OFFICE

FOR THE YEAR 1893

ALBANY:

J. B. LIPPINCOTT & CO., PRINTERS.

1894.

THE STATE OF NEW YORK.

JANUARY 18, 1894.

REPORT OF THE

COMMISSIONERS OF THE LAND OFFICE

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1894.

THE STATE OF NEW YORK.

JANUARY 18, 1894.

Graph Showing Eradication Data By Years 1928 to 1936 Inclusive

LEGEND

Each tenth inch = \$500.00 Expended
 " " = 2000 Acres Worked
 " " = 20000 Ribes Bushes Pulled
 " " = 200 Man-Days

1928
to
1931

1928 to 1931
 \$384.66
 4,187 Acres
 13,586 Ribes
 - Man-Days

1932

1932
 \$223.51
 2848 Acres
 36,274 Ribes
 - Man-Days

1933

1933
 \$9378.58
 22,768 Acres
 262,045 Ribes
 2911 Man-Days

1934

1934
 \$30,760.93
 108,626 Acres
 1068,675 Ribes
 11884 Man-Days

1935

1935
 \$31,721.05
 92818 Acres
 1323,733 Ribes
 13,666 Man-Days

1936

1936
 \$21,024.39
 107,952 Acres
 1,028,636 Ribes
 12,333 Man-Days

U.S. DEPARTMENT
OF AGRICULTURE
PLANT QUARANTINE
HUG 28 11 53 PM '37
ANS'D

STATUS OF CONTROL IN NATIVE STANDS

VIRGINIA

TABLE 6

County	Initial Work % Completed	Second Working % Completed
Albemarle	100%	-
Alleghany	100%	-
Amherst	75%	-
Augusta	75%	15%
Bath	50%	-
Bland	100%	-
Botetourt	100%	-
Carroll	100%	-
Clarke	100%	-
Craig	100%	-
Fairfax	100%	-
Fauquier	100%	-
Floyd	10%	-
Franklin	50%	-
Giles	100%	100%
Grayson	75%	-
Greene	95%	-
Henry	100%	-
Highland	100%	-
Loudon	100%	-
Madison	100%	50%
Montgomery	75%	-
Nelson	100%	-
Page	100%	10%
Pulaski	75%	-
Rappahannock	100%	-
Roanoke	25%	-
Rockbridge	100%	-
Rockingham	100%	20%
Scott	100%	-
Shenandoah	30%	-
Smyth	75%	-
Tazewell	100%	-
Warren	100%	-
Washington	100%	-
Wise	100%	-
Wythe	15%	-

VIRGINIA

TABLE 7 WHITE PINE ACREAGE IN VIRGINIA, INITIALLY PROTECTED FROM BLISTER RUST, BY OWNERSHIP AND YEAR

Year	National Forests	National Parks	Total Federal	Priv. and State	Total white pine areas
1929	420	-	420	-	420
1930	530	-	530		530
1931	500		500		500
1932	402		402	545	947
1933	1619	2742	4361	869	5230
1934	1486	2309	3795	18119	21914
1935	3169	3475	6644	18124	24768
1936	91	507	598	29400	29998
Totals	8217	9033	17250	67057	84307

1. The first part of the document is a list of the names of the persons who have been appointed to the various offices of the County of ... for the year 1900.

NAME	OFFICE	TERM	DATE	PLACE	REMARKS
...
...
...
...
...
...
...
...

...
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VIRGINIA

TABLE 8 CULTIVATED BLACK CURRANT ERADICATION IN VIRGINIA

Year	No. of Inspections Made	No. of Locations Found	No. of C. B. C. Destroyed	No. of 8 hour man-days
1936	N O N E			
1918-1936	24	24	12	0.25

TABLE 9 NURSERY SANITATION, IN VIRGINIA

Year	No. of Nurs. Worked	No. of white pine in Nurs.	Acreage in Control Area	No. of Ribes Destroyed		Total
				Wild	Culti.	
1936	6	61,854	10,575	22	79	101
1918-1936	6	-	13,191	192	1730	1922

Table 8 b continued

Year	Number 8 hour man-days	Interstate shipping permits issued	Cost
1936	52.1	6	\$142.71
1918-1936	99.1	6	\$452.23

TABLE 10 W. P. A PERSONNEL IN 1936 in VIRGINIA

Agents	6
Clerks and stenographer	9
Professional	4
Skilled	11
Intermediate	14
Unskilled	246
Total	284

Journal

March 11, 1877

St. Louis, Mo.

214

Left St. Louis at 8:00 AM for
St. Charles, Mo. Arrived at 10:30 AM.
Spent the day at the residence of
Mr. J. H. Smith.

March 12

215

Left St. Charles at 8:00 AM for
St. Louis, Mo. Arrived at 10:30 AM.

March 13, 1877

216

Left St. Louis at 8:00 AM for
St. Charles, Mo. Arrived at 10:30 AM.
Spent the day at the residence of
Mr. J. H. Smith.

March 14, 1877

217

Left St. Charles at 8:00 AM for
St. Louis, Mo. Arrived at 10:30 AM.

March 15, 1877

218

Left St. Louis at 8:00 AM for
St. Charles, Mo. Arrived at 10:30 AM.
Spent the day at the residence of
Mr. J. H. Smith.

March 16, 1877

219

Left St. Charles at 8:00 AM for
St. Louis, Mo. Arrived at 10:30 AM.

March 17, 1877

220

Left St. Louis at 8:00 AM for
St. Charles, Mo. Arrived at 10:30 AM.
Spent the day at the residence of
Mr. J. H. Smith.

TABLE 11 COMBINED FEDERAL AND STATE EXPENDITURES IN VIRGINIA, BY ACTIVITIES

Activity	1936	1916 to 1935 Inclusive	1916-36 Inclusive
Supervision	\$12,494.75	\$ 6,545.45	\$ 19,040.20
Ribes Erad.	21,024.39	72,363.73	93,388.12
Survey Work	4,017.30	17,140.40	21,157.70
Nursery Sanitation	142.71	309.52	452.23
Treatment Infected trees	334.10	619.64	953.74
Black Currant Erad.	0	1.00	1.00
Totals Outside Richmond	\$38,013.25	\$96,979.74	\$134,992.99
Richmond Office supervision, etc.	\$ 9,689.83		
Total spent in Virginia and in Richmond	\$47,703.08		

TABLE 12

SUMMARY OF FEDERAL AND STATE EXPENDITURES FOR BLISTER RUST CONTROL

Year	Federal Expenditures	State Expenditure Including All Coop. Funds	Grand Total
1936	\$ 46,751.08	\$ 952.00	\$47,703.08
1918-1936	141,920.82	2,762.00	144,682.82

1. The first part of the paper is devoted to a general discussion of the problem. It is shown that the problem is of great importance in the theory of the structure of matter.

2. In the second part of the paper the author considers the case of a particular value of the parameter α . It is shown that in this case the problem can be solved exactly. The results of the calculation are given in the form of a table.

3. In the third part of the paper the author considers the case of a particular value of the parameter β . It is shown that in this case the problem can be solved exactly. The results of the calculation are given in the form of a table.

4. In the fourth part of the paper the author considers the case of a particular value of the parameter γ . It is shown that in this case the problem can be solved exactly. The results of the calculation are given in the form of a table.

5. In the fifth part of the paper the author considers the case of a particular value of the parameter δ . It is shown that in this case the problem can be solved exactly. The results of the calculation are given in the form of a table.

6. In the sixth part of the paper the author considers the case of a particular value of the parameter ϵ . It is shown that in this case the problem can be solved exactly. The results of the calculation are given in the form of a table.

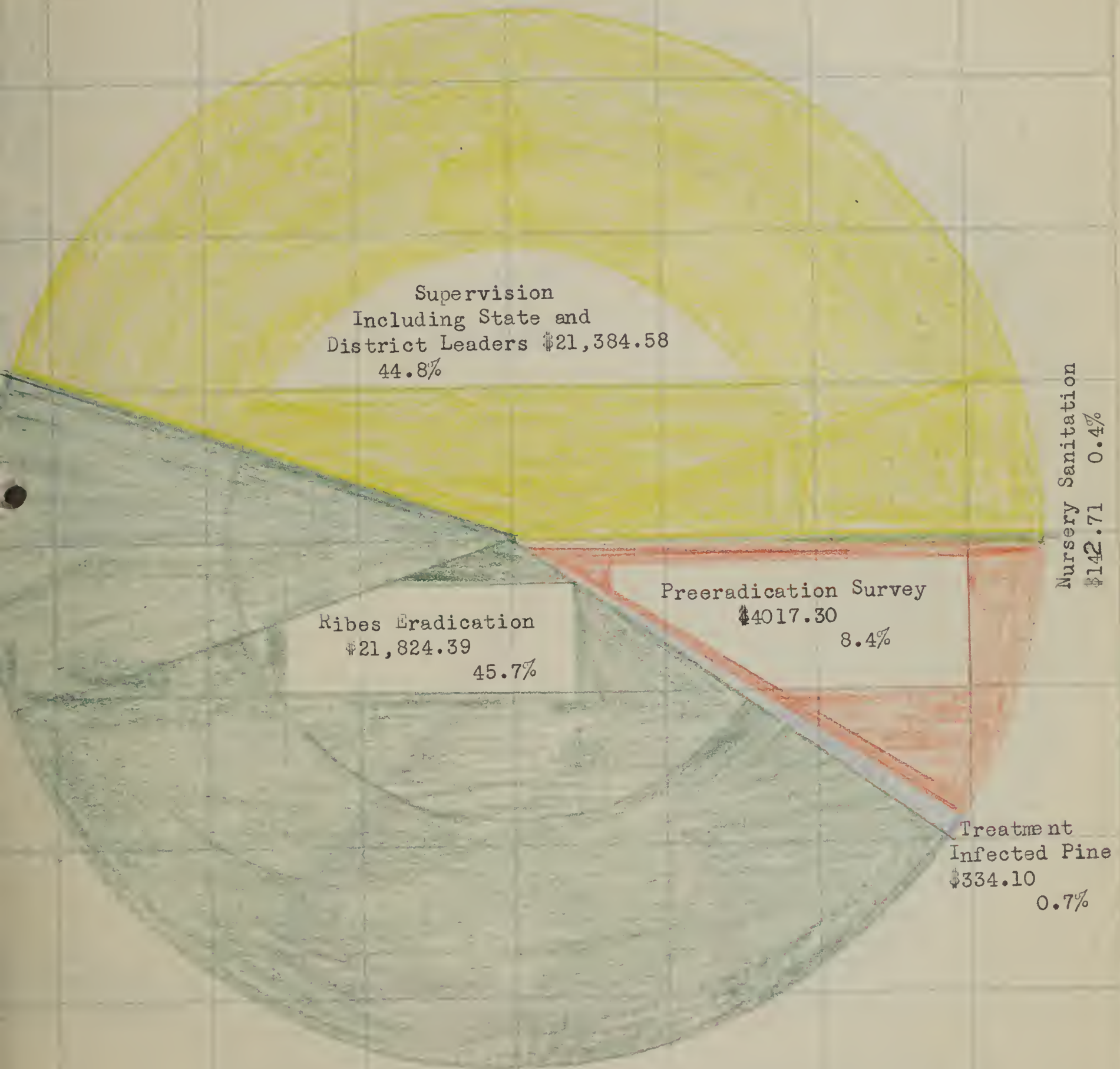
7. In the seventh part of the paper the author considers the case of a particular value of the parameter ζ . It is shown that in this case the problem can be solved exactly. The results of the calculation are given in the form of a table.

-48 A-

VIRGINIA

Graph Showing Amounts Expended in Blister Rust Control by
Federal, State and Private Agencies (Combined) in 1936.
(Including Richmond Office)

Total Expenditures \$47,703.08



THE UNIVERSITY OF CHICAGO

DEPARTMENT OF CHEMISTRY

RESEARCH REPORT

NO. 100

1950

BY

J. H. DILLON

AND

W. R. HARRIS

1950

1950

1950

1950

1950

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1950

Graph Showing Relative Amounts Expended for Blister Rust
Control by Federal and State Governments
From 1918 to 1936 Inclusive

(Including Richmond Office)

(Total Expenditures \$144,682.82)

\$140,000

Federal Expendi-
tures

\$141,920.82

120,000

100,000

80,000

60,000

40,000

20,000

State Expenditures
\$2,762.00

THE UNIVERSITY OF CHICAGO
DEPARTMENT OF CHEMISTRY
LABORATORY OF ORGANIC CHEMISTRY
CHICAGO, ILLINOIS 60637

1. Name of compound: *1,2-dichloroethane*

2. Molecular weight: *98.96*

3. Boiling point: *83.5 °C*

4. Melting point: *-35.0 °C*

5. Density: *1.25 g/mL*

6. Refractive index: *1.424*

7. Viscosity: *0.24 cP*

Prepared by: *J. Smith*
Date: *10/1/80*

Table 13 STATUS OF BLISTER RUST IN VIRGINIA

County	Year Blister Rust First Reported		Reported in 1936
	On White Pine	On Ribes	
Augusta	1933	1933	Present in 2 new locations
Bath		1935	
Clarke	1910		
Frederick		1931	Present in one new lo- cality
Highland		1935	
Madison	1933	1933	Present in one new lo- cality
Nelson		1934	
Page	1934	1933	
Rappahannock	1934	1931	Present in one new lo- cality
Rockingham		1934	

General Information			112 1 1903
Name of the person or organization			Address
John Doe	100	100	100
	100	100	100
Jane Smith	100	100	100
	100	100	100
Bob Johnson	100	100	100
	100	100	100
Alice Brown	100	100	100
	100	100	100
Charlie White	100	100	100
	100	100	100
Diana Green	100	100	100
	100	100	100
Eve Black	100	100	100
	100	100	100
Frank Gray	100	100	100
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Grace Hall	100	100	100
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Henry King	100	100	100
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Ivy Lee	100	100	100
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Jack Miller	100	100	100
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Karen Wilson	100	100	100
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Leo Young	100	100	100
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Mia Adams	100	100	100
	100	100	100
Noah Baker	100	100	100
	100	100	100
Olivia Carter	100	100	100
	100	100	100
Peter Davis	100	100	100
	100	100	100
Quinn Evans	100	100	100
	100	100	100
Samuel Foster	100	100	100
	100	100	100
Tina Gibson	100	100	100
	100	100	100
Uma Harper	100	100	100
	100	100	100
Victor Ives	100	100	100
	100	100	100
Wendy Jones	100	100	100
	100	100	100
Xavier Kelly	100	100	100
	100	100	100
Yara Knight	100	100	100
	100	100	100
Zoe Lamb	100	100	100
	100	100	100

-49A-

VIRGINIA

Native Stand of Pure White Pine Adjoining the
Village of Damascus, Washington County, Virginia.



Photo 39, Roll 11, by Dr. S. B. Fracker

84,307 Acres of White Pine have been Initially
Protected in Virginia Since January 1, 1929
Through the Destruction of 3,629,134 wild and
40,815 Cultivated Ribes Bushes

1000

1000

1000

1000

1000

WEST VIRGINIA

SUMMARY OF ALL BLISTER RUST CONTROL ACTIVITIES IN WEST VIRGINIA IN 1936 AND FROM 1932 to 1936 INCLUSIVE

TABLE 1 LOCAL CONTROL - RIBES ERADICATION

Years	Acreage Worked		Total Ribes Destroyed	Total man days labor	Average Number Ribes per Acre on all Lands Wkd.	Number Man-days per A.
	Total	Initially				
1936	86,928	75,813	376,433	5827.5	4.3	0.067
1932-1936	162,317	148,720	976,780	11432.1	6.01	0.074

TABLE 2 OWNERSHIP OF LAND - ACREAGE WORKED IN RIBES ERADICATION

Year	National Forests	State	Private	Total
1936	17,933	2,619	66,376	86,928
1932-1936	27,474	134,843 (1)		162,317

(1) State and Private Lands combined.

TABLE 3 TOTAL COST OF LOCAL CONTROL BY PROJECTS

Year	Regular	W. P. A.	P. W. A.	E. C. W.	Total
1936	-	\$13,839.20	-	\$3,217.80	\$17,057.00
1932-1936	\$24.35	18,059.42	\$11,497.30	6,938.38	36,519.45

West Virginia

Ribes Eradication in West Virginia

Table 4 Total Acreage Worked by Projects

Year	Regular	W. P. A.	P. W. A.	E. C. W.	All Projects
1936	-	71388	-	15540	86928
1932-'36	268	86924	46045	29080	162317

Table 5 Ribes Eradication Cost per acre by Projects

Year	Regular	W. P. A.	P. W. A.	E. C. W.	All Projects
1936	\$ -	\$0.195	-	\$0.207	\$0.196
1932 -'36	0.098	0.218	0.249	0.238	0.225

Table 6 White Pine Acreage in West Virginia
Initially Protected from Blister Rust by Ownership and year

Year	National Forests	National Park	Total Federal Lands	State and Private	Total White Pine Acreage
1932	30	0	30	29	59
1933	175	0	175	1018	1193
1934	212	0	212	5328	5540
1935	928	0	928	11254	12182
1936	8597	0	8597	22556	31153
Totals	9942	0	9942	40185	50,127

Table 7 Summary of Nursery Sanitation in West Virginia

Year	No. Nurseries Worked	No. White Pine in Nurseries	No. Acres Worked	No. Ribes destroyed		
				Wild	Cult.	Total
1936	2	734,000	780	4040	21	4061
1932- '36	2	-	780	19206	312	19518

GENERAL STATE OF NEW YORK

IN SENATE, JANUARY 1, 1892.

REPORT OF THE COMMISSIONERS OF THE LAND OFFICE.

ALBANY:

1891	1890	1889	1888	1887	1886	1885	1884	1883	1882	1881	1880	1879	1878	1877	1876	1875	1874	1873	1872	1871	1870	1869	1868	1867	1866	1865	1864	1863	1862	1861	1860	1859	1858	1857	1856	1855	1854	1853	1852	1851	1850	1849	1848	1847	1846	1845	1844	1843	1842	1841	1840	1839	1838	1837	1836	1835	1834	1833	1832	1831	1830	1829	1828	1827	1826	1825	1824	1823	1822	1821	1820	1819	1818	1817	1816	1815	1814	1813	1812	1811	1810	1809	1808	1807	1806	1805	1804	1803	1802	1801	1800	1799	1798	1797	1796	1795	1794	1793	1792	1791	1790	1789	1788	1787	1786	1785	1784	1783	1782	1781	1780	1779	1778	1777	1776	1775	1774	1773	1772	1771	1770	1769	1768	1767	1766	1765	1764	1763	1762	1761	1760	1759	1758	1757	1756	1755	1754	1753	1752	1751	1750	1749	1748	1747	1746	1745	1744	1743	1742	1741	1740	1739	1738	1737	1736	1735	1734	1733	1732	1731	1730	1729	1728	1727	1726	1725	1724	1723	1722	1721	1720	1719	1718	1717	1716	1715	1714	1713	1712	1711	1710	1709	1708	1707	1706	1705	1704	1703	1702	1701	1700	1699	1698	1697	1696	1695	1694	1693	1692	1691	1690	1689	1688	1687	1686	1685	1684	1683	1682	1681	1680	1679	1678	1677	1676	1675	1674	1673	1672	1671	1670	1669	1668	1667	1666	1665	1664	1663	1662	1661	1660	1659	1658	1657	1656	1655	1654	1653	1652	1651	1650	1649	1648	1647	1646	1645	1644	1643	1642	1641	1640	1639	1638	1637	1636	1635	1634	1633	1632	1631	1630	1629	1628	1627	1626	1625	1624	1623	1622	1621	1620	1619	1618	1617	1616	1615	1614	1613	1612	1611	1610	1609	1608	1607	1606	1605	1604	1603	1602	1601	1600	1599	1598	1597	1596	1595	1594	1593	1592	1591	1590	1589	1588	1587	1586	1585	1584	1583	1582	1581	1580	1579	1578	1577	1576	1575	1574	1573	1572	1571	1570	1569	1568	1567	1566	1565	1564	1563	1562	1561	1560	1559	1558	1557	1556	1555	1554	1553	1552	1551	1550	1549	1548	1547	1546	1545	1544	1543	1542	1541	1540	1539	1538	1537	1536	1535	1534	1533	1532	1531	1530	1529	1528	1527	1526	1525	1524	1523	1522	1521	1520	1519	1518	1517	1516	1515	1514	1513	1512	1511	1510	1509	1508	1507	1506	1505	1504	1503	1502	1501	1500	1499	1498	1497	1496	1495	1494	1493	1492	1491	1490	1489	1488	1487	1486	1485	1484	1483	1482	1481	1480	1479	1478	1477	1476	1475	1474	1473	1472	1471	1470	1469	1468	1467	1466	1465	1464	1463	1462	1461	1460	1459	1458	1457	1456	1455	1454	1453	1452	1451	1450	1449	1448	1447	1446	1445	1444	1443	1442	1441	1440	1439	1438	1437	1436	1435	1434	1433	1432	1431	1430	1429	1428	1427	1426	1425	1424	1423	1422	1421	1420	1419	1418	1417	1416	1415	1414	1413	1412	1411	1410	1409	1408	1407	1406	1405	1404	1403	1402	1401	1400	1399	1398	1397	1396	1395	1394	1393	1392	1391	1390	1389	1388	1387	1386	1385	1384	1383	1382	1381	1380	1379	1378	1377	1376	1375	1374	1373	1372	1371	1370	1369	1368	1367	1366	1365	1364	1363	1362	1361	1360	1359	1358	1357	1356	1355	1354	1353	1352	1351	1350	1349	1348	1347	1346	1345	1344	1343	1342	1341	1340	1339	1338	1337	1336	1335	1334	1333	1332	1331	1330	1329	1328	1327	1326	1325	1324	1323	1322	1321	1320	1319	1318	1317	1316	1315	1314	1313	1312	1311	1310	1309	1308	1307	1306	1305	1304	1303	1302	1301	1300	1299	1298	1297	1296	1295	1294	1293	1292	1291	1290	1289	1288	1287	1286	1285	1284	1283	1282	1281	1280	1279	1278	1277	1276	1275	1274	1273	1272	1271	1270	1269	1268	1267	1266	1265	1264	1263	1262	1261	1260	1259	1258	1257	1256	1255	1254	1253	1252	1251	1250	1249	1248	1247	1246	1245	1244	1243	1242	1241	1240	1239	1238	1237	1236	1235	1234	1233	1232	1231	1230	1229	1228	1227	1226	1225	1224	1223	1222	1221	1220	1219	1218	1217	1216	1215	1214	1213	1212	1211	1210	1209	1208	1207	1206	1205	1204	1203	1202	1201	1200	1199	1198	1197	1196	1195	1194	1193	1192	1191	1190	1189	1188	1187	1186	1185	1184	1183	1182	1181	1180	1179	1178	1177	1176	1175	1174	1173	1172	1171	1170	1169	1168	1167	1166	1165	1164	1163	1162	1161	1160	1159	1158	1157	1156	1155	1154	1153	1152	1151	1150	1149	1148	1147	1146	1145	1144	1143	1142	1141	1140	1139	1138	1137	1136	1135	1134	1133	1132	1131	1130	1129	1128	1127	1126	1125	1124	1123	1122	1121	1120	1119	1118	1117	1116	1115	1114	1113	1112	1111	1110	1109	1108	1107	1106	1105	1104	1103	1102	1101	1100	1099	1098	1097	1096	1095	1094	1093	1092	1091	1090	1089	1088	1087	1086	1085	1084	1083	1082	1081	1080	1079	1078	1077	1076	1075	1074	1073	1072	1071	1070	1069	1068	1067	1066	1065	1064	1063	1062	1061	1060	1059	1058	1057	1056	1055	1054	1053	1052	1051	1050	1049	1048	1047	1046	1045	1044	1043	1042	1041	1040	1039	1038	1037	1036	1035	1034	1033	1032	1031	1030	1029	1028	1027	1026	1025	1024	1023	1022	1021	1020	1019	1018	1017	1016	1015	1014	1013	1012	1011	1010	1009	1008	1007	1006	1005	1004	1003	1002	1001	1000	999	998	997	996	995	994	993	992	991	990	989	988	987	986	985	984	983	982	981	980	979	978	977	976	975	974	973	972	971	970	969	968	967	966	965	964	963	962	961	960	959	958	957	956	955	954	953	952	951	950	949	948	947	946	945	944	943	942	941	940	939	938	937	936	935	934	933	932	931	930	929	928	927	926	925	924	923	922	921	920	919	918	917	916	915	914	913	912	911	910	909	908	907	906	905	904	903	902	901	900	899	898	897	896	895	894	893	892	891	890	889	888	887	886	885	884	883	882	881	880	879	878	877	876	875	874	873	872	871	870	869	868	867	866	865	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Table 7 Continued

Year	No. 8 hour man days	Federal Permit Required	Received
1936	134.1	2	2
1932 - '36	670.1	2	2

Table 8 Cultivated Black Currant Eradication

Year	No. Inspections Made	No. Locations found	No. C.B.C. destroyed	No 8 hours man days
1936		None		
1932 - '36	1	1	0	0.50

Table 9 Status of Blister Rust in West Virginia

County	Year Blister Rust First Reported On White Pine	On Ribes	Reported in 1936
Pendleton	1934	1934	on 2 cultivated Ribes
Pocahontas	-	1933	None
Randolph	-	1931	None
Tucker	-	1931	None

Table 10. Treatment Infected White Pine - None

Table 11 W. P. A. Personnel in West Virginia
in 1936

Different persons on the payroll

Agents	6
Professional	None
Skilled	12
Intermediate	11
Unskilled	140
Clerks	2
Total	171

Date		Description		Amount	
1901	Jan 1	Balance		100.00	
1901	Jan 15	Received from A. B.		50.00	
1901	Feb 1	Received from C. D.		25.00	
1901	Mar 1	Received from E. F.		75.00	
1901	Apr 1	Received from G. H.		100.00	
1901	May 1	Received from I. J.		150.00	
1901	Jun 1	Received from K. L.		200.00	
1901	Jul 1	Received from M. N.		250.00	
1901	Aug 1	Received from O. P.		300.00	
1901	Sep 1	Received from Q. R.		350.00	
1901	Oct 1	Received from S. T.		400.00	
1901	Nov 1	Received from U. V.		450.00	
1901	Dec 1	Received from W. X.		500.00	
1901	Dec 31	Total		2500.00	

Received of
 the Treasurer
 of the
 Board of
 Directors
 the sum of
 Five Hundred
 Dollars
 for the year
 1901

Table 12 Combined Federal and State Expenditures on
Blister Rust Control by Activity in West Virginia

Activity	1936	1918-1935	1918-1936 Incl.
Supervision	\$10,011.86	\$5507.89	\$15,519.75
Ribes Erad.	17,057.00	19462.45	36,519.45
Cult. Bl. Cur.	0	2.00	2.00
Nursery Sanitation	686.00	1592.36	2,278.36
Preeradication survey	10,053.51	9093.57	19,147.08
All other Exp.	0		
Totals	37,808.37	35,658.27	73,466.64

Table 13 Summary of Federal and State Expenditures on
Blister Rust Control

Year	Federal Expend.	State Expend. including all cooperative funds	Grand Total
1936	\$36454.06	\$1354.31	\$37,808.37
1918- '36	70252.71	3213.93	73,466.64

WEST VIRGINIA

Young White Pine Stand in Former Pasture Reported to Have Been Cleared About 1911. This Pine Reproduction is Said to Have Grown in the 25 Years Since



Photo 14, Roll 12 - by Dr. S. B. Fracker

50,127 Acres of White Pines Have Been Initially Protected in West Virginia through the Eradication of 970,973 Wild Ribes and 5,807 Cultivated Bushes Since January 1, 1932.

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LOCAL CONTROL - RIBES ERADICATION
STATISTICAL TABLES BY STATES
GIVING DATA FOR 1936, AND FOR
PREVIOUS YEARS, BY PROJECT
WORKING, OWNERSHIP AND
YEAR INCLUDING COST
DATA

LOCAL CONTROL

Ribes eradication was carried on in six of the Southern Appalachian States in 1936; namely, Georgia, Maryland, North Carolina, Tennessee, Virginia and West Virginia. Laborers and foremen were secured through W. P. A. at prevailing rates of pay set up by the W. P. A. organization. Crews of men either dug and pulled wild Ribes bushes, where a scout indicated their presence, or in scout formation at wide distances they covered an area in parallel strips, and pulled the bushes they came across. Where bushes were located in quantity the width of the strip was cut down. In the case of cultivated bushes, laborers working under an Agent "covered" all houses and house sites, and either persuaded the owner to part with the bushes or left the matter of persuasion to the foreman or agent.

Eradication was carried out in 1936 under W. P. A. and E. C. W. Projects, and also by Agricultural Resettlement Administration and the Soil Conservation Service, and by the States and private cooperators.

In 1936, 1,413,269 acres were worked in contrast to 999,116 acres in 1935. In 1936, 5,804,474 Ribes were destroyed, in contrast to 3,504,725 Ribes destroyed in 1935. In 1936, 44,717.5 man days labor were spent on eradication, while in 1935, only 32,065.19 man days labor were expended. Local control cost \$103,712.11 in 1936, while in 1935 it cost \$94,510.97. (In 1935 this cost included supervision of agents for all states, and in

the case of Georgia and South Carolina also the State Leaders since they were in the field supervising eradication work.)

In 1936, the cost of local control excluding nursery sanitation was \$0.73 per acre, while in 1935, the cost per acre was \$0.094. Ribes per acre averaged 4.1 in 1936; and 3.5 in 1935.

A set of tables has been prepared for each State giving all of the data on Ribes Eradication by project, working, ownership, and cost for 1936, and for the period 1928 to 1936. In Virginia the work started in 1928, in all other States in 1932. These tables follow.

The first of these is the fact that the
 results of the first experiment are in
 general agreement with those of the
 second. The only difference is that the
 results of the first experiment are more
 accurate than those of the second.
 This is due to the fact that the
 results of the first experiment are
 more accurate than those of the second.
 The only difference is that the
 results of the first experiment are
 more accurate than those of the second.

Graph Showing by States, Comparison of Total Acreage Worked and Number of Ribes (Wild and Cultivated) Removed in 1936, in the Southern Appalachian States, exclusive of Nursery Sanitation and Black Currant Eradication.

North Carolina 976, 673. A

Total Acreage Worked in 1936

900

800

700

600

500

400

300

200

Georgia
109,105 A

Virginia
107,952 A

Tennessee
102,443 A

West Va.
86,928 A

Md 30,168 A

Total Number of Ribes Pulled in 1936

1800

1600

1400

1200

1000

800

600

400

200

Georgia 1810,876 Ribes

Tennessee 1315,138 Ribes

Virginia 1028,636 Ribes

North Carolina 702,120 Ribes

Maryland 545,282 Ribes

West Virginia
376,433 Ribes

\$50,000 Graph Showing Comparative amounts Expended from Federal, State and Local Funds for Ribes Eradication in Southern Appalachian States in 1936

\$40,000

\$30,000

\$20,000

\$10,000

N. Car. \$37,668.71

Va. \$21,824.39

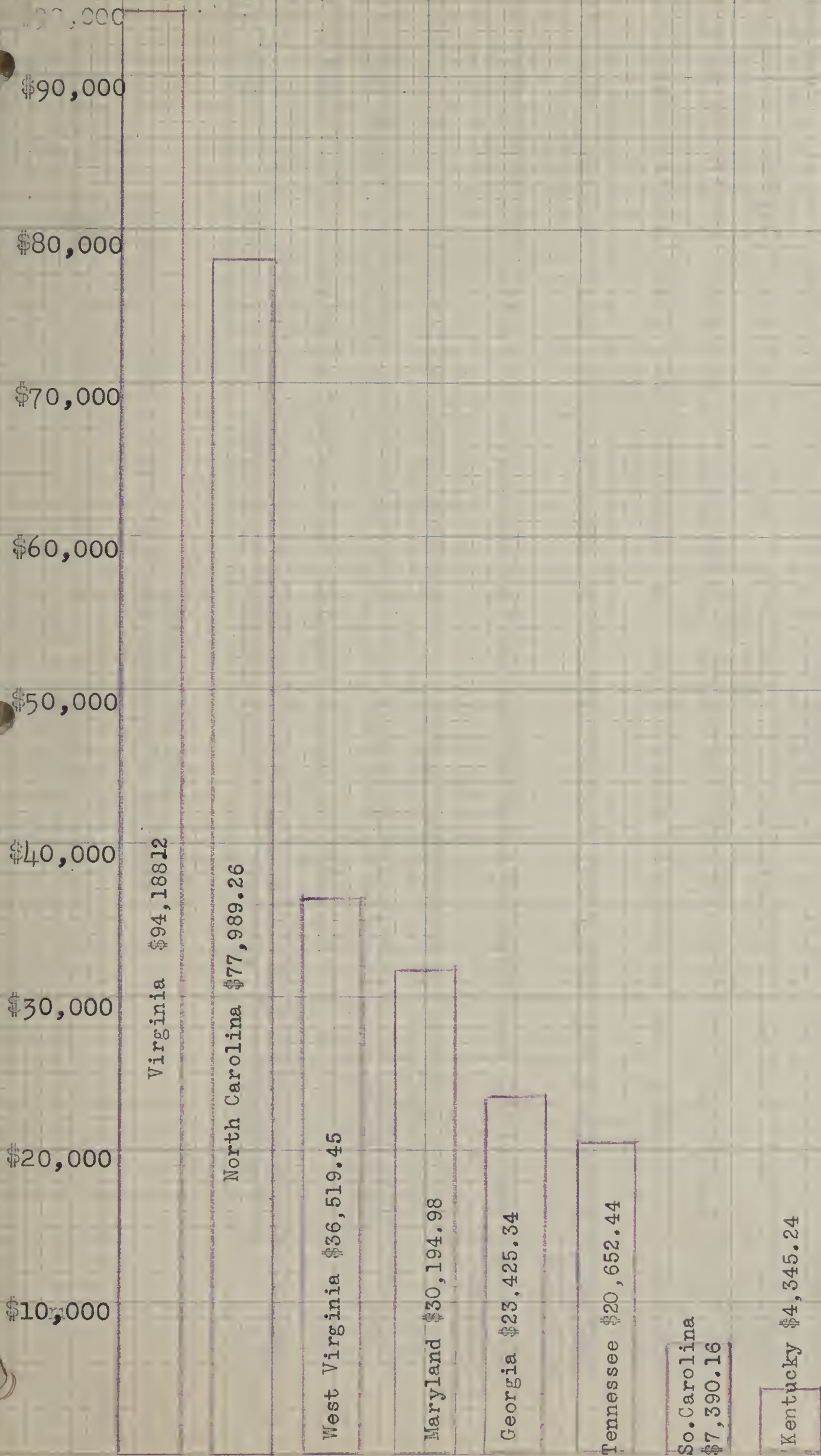
W. Va. 17,057.00

\$9,953.65 Md.

\$9,050.04 Ga.

\$8,158.32 Tenn.

Graph Showing Comparative Amounts Expended for Ribes Eradication from the Combined Federal, State and Local Funds in the Southern Appalachian States, 1918 to 1936 Incl.



SOUTHERN APPALACHIAN REGION - 1933 to 1935 Inclusive

Rate of Coverage

Year	Georgia			Maryland			North Carolina			Tennessee			Virginia			West Virginia		
	a	r	T	a	r	T	a	r	T	a	r	T	a	r	T	a	r	T
1933	0	--	*	1,890	99.1	.18	29,570	.012	1.0	10,720	5.86	.15	22,768	11.5	.37	4,256	14.2	.39
1934	133,362	.09	.1	107,164	9.0	.07	582,610	.17	.12	101,588	.64	.15	108,626	9.8	.36	33,184	4.1	.28
1935	173,097	4.75	.32	42,862	16.3	.21	588,360	.44	.20	48,647	6.67	.14	92,818	14.3	.37	37,681	10.7	.26
1936-WPA																		
WPA-135(W)	124,122	6.5	.09	18,487	16.7	.24	241,189	.57	.36	15,439	12.4	.21	41,379	3.5	.43	15,536	7.7	.28
W. & Cult.																		
WPA-132-35	124,122	6.5	.09	18,487	16.7	.24	241,189	.87	.30	15,439	12.4	.21	41,379	3.5	.43	15,536	7.7	.28
Wild																		
PWA-1935	48,975	.085	.19	18,642	6.1	.24	347,171	.03	.23	32,802	3.6	.09	31,816	9.8	.14	15,214	15.7	.19
W. & Cult.																		
PWA-132-35	175,695	.14	.11	127,436	9.4	.09	905,183	.16	.10	122,340	1.3	.09	124,400	6.0	.18	46,045	7.5	.19
Wild																		
ECW-1935	---	---	---	5,733	47.9	.22	0	---	---	406	2.8	.17	19,623	43.7	.69	6,931	7.5	.37
W. & Cult.																		
ECW-132-35	15,493	.015	.25	5,993	58.5	.25	54,168	.01	1.0	23,176	3.8	.16	55,842	31.5	.62	13,540	9.9	.42

A = Total Number of acres.

r = Ribes per acre.

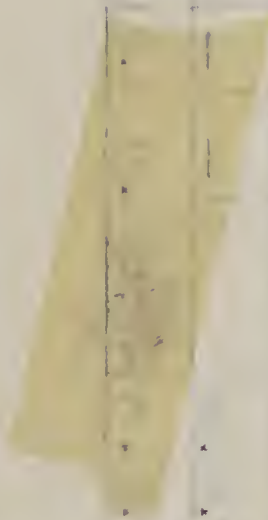
T = Man days per acre if Ribes had been 100 per acre.

Dr. S. B. Fracker
2/1/37

Note: For Ribes populations of similar size, Tennessee and Maryland have tended to cover the ground faster than Virginia and West Virginia (also Georgia in 1935). North Carolina is not exactly comparable on account of the number of "cultivated Ribes" charged against the wild acreage.

THEORY

1. The first part of the theory is the definition of the function $f(x)$ which is defined on the interval $[a, b]$ and is continuous on this interval.	
2. The second part of the theory is the definition of the function $F(x)$ which is defined on the interval $[a, b]$ and is continuous on this interval.	
3. The third part of the theory is the definition of the function $G(x)$ which is defined on the interval $[a, b]$ and is continuous on this interval.	
4. The fourth part of the theory is the definition of the function $H(x)$ which is defined on the interval $[a, b]$ and is continuous on this interval.	
5. The fifth part of the theory is the definition of the function $I(x)$ which is defined on the interval $[a, b]$ and is continuous on this interval.	
6. The sixth part of the theory is the definition of the function $J(x)$ which is defined on the interval $[a, b]$ and is continuous on this interval.	
7. The seventh part of the theory is the definition of the function $K(x)$ which is defined on the interval $[a, b]$ and is continuous on this interval.	
8. The eighth part of the theory is the definition of the function $L(x)$ which is defined on the interval $[a, b]$ and is continuous on this interval.	
9. The ninth part of the theory is the definition of the function $M(x)$ which is defined on the interval $[a, b]$ and is continuous on this interval.	
10. The tenth part of the theory is the definition of the function $N(x)$ which is defined on the interval $[a, b]$ and is continuous on this interval.	



...the first part of the theory is the definition of the function $f(x)$ which is defined on the interval $[a, b]$ and is continuous on this interval.

...the second part of the theory is the definition of the function $F(x)$ which is defined on the interval $[a, b]$ and is continuous on this interval.

...the third part of the theory is the definition of the function $G(x)$ which is defined on the interval $[a, b]$ and is continuous on this interval.

...the fourth part of the theory is the definition of the function $H(x)$ which is defined on the interval $[a, b]$ and is continuous on this interval.

...the fifth part of the theory is the definition of the function $I(x)$ which is defined on the interval $[a, b]$ and is continuous on this interval.

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...the seventh part of the theory is the definition of the function $K(x)$ which is defined on the interval $[a, b]$ and is continuous on this interval.

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...the ninth part of the theory is the definition of the function $M(x)$ which is defined on the interval $[a, b]$ and is continuous on this interval.

...the tenth part of the theory is the definition of the function $N(x)$ which is defined on the interval $[a, b]$ and is continuous on this interval.

TABLE . . . 1

Eradication of Wild Ribes in Georgia
By Programs - - - - - 1936

Program	Acreage Worked 1936	No. Ribes Destroyed	No. Man-Days Labor	Percent Total Acreage Worked
Regular	0	0	0	0
W. P. A	109,105	1,764,305	3,650	100
P. W. A	0	0	0	0
E. C. W	0	0	0	0
Total	109,105	1,764,305	3,650	100

Table 1

Summary of the results of the experiments

Table 1 shows the results of the experiments

Experiment	Time (min)	Distance (m)	Speed (m/s)
1	10	100	10.0
2	20	200	10.0
3	30	300	10.0
4	40	400	10.0
5	50	500	10.0

The results of the experiments are shown in Table 1. The speed is constant at 10.0 m/s for all experiments.

ERADICATION OF WILD RIBES BUSHES IN

GEORGIA

By First and Second Workings

In 1936

TABLE 2

Working	Acreage Worked	No. of Ribes Destroyed	No. of Man-days Labor	Ribes Per Acre
First	108,950	1,734,447	3,350	15.9
Second	155	29,858	300	192.4
Totals	109,105	1,764,305	3,650	16.1

Revised
3/3/37

1. *Staphylococcus aureus* (1000)

2. *Staphylococcus aureus* (1000)

3. *Staphylococcus aureus* (1000)

4. *Staphylococcus aureus* (1000)

No.		Name		Date	
1	1000	1000	1000	1000	1000
2	1000	1000	1000	1000	1000
3	1000	1000	1000	1000	1000
4	1000	1000	1000	1000	1000

5. *Staphylococcus aureus* (1000)

ERADICATION OF RIBES IN GEORGIA
ACCORDING TO LAND OWNERSHIP

1 9 3 6

TABLE 3

Ownership	Project	Acreage Worked	No. of Ribes Destroyed			No. of man- days labor
			Wild	Culti.	Total	
National Forest	WPA	73,655	1,542,896	25,690	1568,586	3350
Private land		0	0	0	0	0
Private land	WPA	35,450	221,409	20,881	242,290	300
Totals		109,105	1,764,305	46,571	1810,876	3650

Revised
3/3/37

THE UNIVERSITY OF CHICAGO

DEPARTMENT OF CHEMISTRY

1950

RESEARCH REPORT

1950

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1950

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1950

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DEPARTMENT OF CHEMISTRY

RESEARCH REPORT

SUMMARY OF RIBES ERADICATION

GEORGIA

BY YEARS 1933-1936

TABLE 4

Year	Acreage Worked	No. Ribes Destroyed	No. of man-days labor	Ribes per acre	Man-Days per acre
1933	8,851	0	40	0	0.004
1934	133,362	12,744	468	0.09	0.003
1935	173,097	849,270	3,237	4.9	0.02
1936	109,105	1810876	3,650	16.5	0.03
Totals.	424,415	2,672,890	7,395	6.27	0.017

SUMMARY OF ERADICATION WORK

IN GEORGIA

BY PROGRAMS - -1933-1936

TABLE 5

Program	Acreage Worked 1933-1936	No. Ribes Destroyed	No. Man Days Labor	Percent of Total Acrg. Worked
Regular	0	0	0	.0
W. P. A	233,227	2,647,637	6,611	54.95
P. W. A	175,695	25,018	733	41.39
E. C. W	15,493	235	51	3.66
Totals	424,415	2,672,890	7,395	100 %

Table 1: Summary of Data

Table 1

Table 1

Table 1

Category	Sub-category	Value	Unit	Notes
1	1.1	1.1	1.1	1.1
2	2.1	2.1	2.1	2.1
3	3.1	3.1	3.1	3.1
4	4.1	4.1	4.1	4.1
5	5.1	5.1	5.1	5.1
6	6.1	6.1	6.1	6.1
7	7.1	7.1	7.1	7.1
8	8.1	8.1	8.1	8.1
9	9.1	9.1	9.1	9.1
10	10.1	10.1	10.1	10.1
11	11.1	11.1	11.1	11.1
12	12.1	12.1	12.1	12.1
13	13.1	13.1	13.1	13.1
14	14.1	14.1	14.1	14.1
15	15.1	15.1	15.1	15.1
16	16.1	16.1	16.1	16.1
17	17.1	17.1	17.1	17.1
18	18.1	18.1	18.1	18.1
19	19.1	19.1	19.1	19.1
20	20.1	20.1	20.1	20.1
21	21.1	21.1	21.1	21.1
22	22.1	22.1	22.1	22.1
23	23.1	23.1	23.1	23.1
24	24.1	24.1	24.1	24.1
25	25.1	25.1	25.1	25.1
26	26.1	26.1	26.1	26.1
27	27.1	27.1	27.1	27.1
28	28.1	28.1	28.1	28.1
29	29.1	29.1	29.1	29.1
30	30.1	30.1	30.1	30.1
31	31.1	31.1	31.1	31.1
32	32.1	32.1	32.1	32.1
33	33.1	33.1	33.1	33.1
34	34.1	34.1	34.1	34.1
35	35.1	35.1	35.1	35.1
36	36.1	36.1	36.1	36.1
37	37.1	37.1	37.1	37.1
38	38.1	38.1	38.1	38.1
39	39.1	39.1	39.1	39.1
40	40.1	40.1	40.1	40.1
41	41.1	41.1	41.1	41.1
42	42.1	42.1	42.1	42.1
43	43.1	43.1	43.1	43.1
44	44.1	44.1	44.1	44.1
45	45.1	45.1	45.1	45.1
46	46.1	46.1	46.1	46.1
47	47.1	47.1	47.1	47.1
48	48.1	48.1	48.1	48.1
49	49.1	49.1	49.1	49.1
50	50.1	50.1	50.1	50.1
51	51.1	51.1	51.1	51.1
52	52.1	52.1	52.1	52.1
53	53.1	53.1	53.1	53.1
54	54.1	54.1	54.1	54.1
55	55.1	55.1	55.1	55.1
56	56.1	56.1	56.1	56.1
57	57.1	57.1	57.1	57.1
58	58.1	58.1	58.1	58.1
59	59.1	59.1	59.1	59.1
60	60.1	60.1	60.1	60.1
61	61.1	61.1	61.1	61.1
62	62.1	62.1	62.1	62.1
63	63.1	63.1	63.1	63.1
64	64.1	64.1	64.1	64.1
65	65.1	65.1	65.1	65.1
66	66.1	66.1	66.1	66.1
67	67.1	67.1	67.1	67.1
68	68.1	68.1	68.1	68.1
69	69.1	69.1	69.1	69.1
70	70.1	70.1	70.1	70.1
71	71.1	71.1	71.1	71.1
72	72.1	72.1	72.1	72.1
73	73.1	73.1	73.1	73.1
74	74.1	74.1	74.1	74.1
75	75.1	75.1	75.1	75.1
76	76.1	76.1	76.1	76.1
77	77.1	77.1	77.1	77.1
78	78.1	78.1	78.1	78.1
79	79.1	79.1	79.1	79.1
80	80.1	80.1	80.1	80.1
81	81.1	81.1	81.1	81.1
82	82.1	82.1	82.1	82.1
83	83.1	83.1	83.1	83.1
84	84.1	84.1	84.1	84.1
85	85.1	85.1	85.1	85.1
86	86.1	86.1	86.1	86.1
87	87.1	87.1	87.1	87.1
88	88.1	88.1	88.1	88.1
89	89.1	89.1	89.1	89.1
90	90.1	90.1	90.1	90.1
91	91.1	91.1	91.1	91.1
92	92.1	92.1	92.1	92.1
93	93.1	93.1	93.1	93.1
94	94.1	94.1	94.1	94.1
95	95.1	95.1	95.1	95.1
96	96.1	96.1	96.1	96.1
97	97.1	97.1	97.1	97.1
98	98.1	98.1	98.1	98.1
99	99.1	99.1	99.1	99.1
100	100.1	100.1	100.1	100.1

ERADICATION OF RIBES IN
GEORGIA
BY FIRST AND SECOND WORKINGS

1933 - 1936

TABLE 6

Working	Acreage Worked	No. Ribes Destroyed	No. Man- Days Labor	Ribes per Acre
First	424,260	2,642,373	7,027	6.2
Second	155	30,517	368	19.68
Totals	424,415	2,672,890	7,395	6.29

STATE OF NEW YORK

IN SENATE

January 10, 1902

REPORT

OF THE

NAME	RESIDENCE	EDUCATION	EXPERIENCE	REMARKS
------	-----------	-----------	------------	---------

1.	John	University	1880-1885	First
2.	John	University	1885-1890	Second

3.	John	University	1890-1895	Third
----	------	------------	-----------	-------

4.	John	University	1895-1900	Fourth
----	------	------------	-----------	--------

ERADICATION OF RIBES IN GEORGIA

ACCORDING TO LAND OWNERSHIP

1933 - 1936

TABLE 7

Ownership Of Land	Acreage Worked	No. Ribes Destroyed	No. Man- Days Labor
National Forest	214,385	2,306,727	5,377
State Lands	125	11,377	31
Private Lands	209,905	354,736	1,987
Totals	424,415	2,672,890	7,395

THE UNIVERSITY OF CHICAGO

DEPARTMENT OF CHEMISTRY

1967-1968

7-1000

NAME	ADDRESS	CITY	STATE
John Doe	123 Main St	Chicago	Illinois
Jane Smith	456 Oak St	Chicago	Illinois
Bob Johnson	789 Elm St	Chicago	Illinois
Alice Brown	101 Maple St	Chicago	Illinois
Frank White	202 Pine St	Chicago	Illinois
Grace Green	303 Cedar St	Chicago	Illinois
Henry Black	404 Birch St	Chicago	Illinois
Irene Gray	505 Spruce St	Chicago	Illinois
James Hall	606 Willow St	Chicago	Illinois
Karen King	707 Ash St	Chicago	Illinois
Leo Lee	808 Hickory St	Chicago	Illinois
Mary Miller	909 Sycamore St	Chicago	Illinois
Nathan Moore	1010 Walnut St	Chicago	Illinois
Olivia Nelson	1111 Chestnut St	Chicago	Illinois
Paul Parker	1212 Locust St	Chicago	Illinois
Quinn Quinn	1313 Olive St	Chicago	Illinois
Rachel Reed	1414 Madison St	Chicago	Illinois
Samuel Ross	1515 Monroe St	Chicago	Illinois
Tina Scott	1616 Lincoln St	Chicago	Illinois
Victor Stone	1717 Taylor St	Chicago	Illinois
Wendy Taylor	1818 Jackson St	Chicago	Illinois
Xavier Thomas	1919 Adams St	Chicago	Illinois
Yvonne Turner	2020 Franklin St	Chicago	Illinois
Zoe Vance	2121 Grant St	Chicago	Illinois
Adam Walker	2222 Hayes St	Chicago	Illinois
Bella Ward	2323 Bond St	Chicago	Illinois
Charlie Webb	2424 Erie St	Chicago	Illinois
Diana Wells	2525 Washington St	Chicago	Illinois
Edward Wilson	2626 Madison St	Chicago	Illinois
Fiona Wood	2727 Monroe St	Chicago	Illinois
Gordon Wright	2828 Lincoln St	Chicago	Illinois
Helen Young	2929 Taylor St	Chicago	Illinois
Isaac Zane	3030 Jackson St	Chicago	Illinois
Julia Ziegler	3131 Adams St	Chicago	Illinois
Kyle Zimmerman	3232 Franklin St	Chicago	Illinois
Laura Zorn	3333 Grant St	Chicago	Illinois
Mark Zuckerman	3434 Hayes St	Chicago	Illinois
Nancy Zuker	3535 Bond St	Chicago	Illinois
Oscar Zuckerman	3636 Erie St	Chicago	Illinois
Pamela Zuckerman	3737 Washington St	Chicago	Illinois
Quinn Zuckerman	3838 Madison St	Chicago	Illinois
Rachel Zuckerman	3939 Monroe St	Chicago	Illinois
Samuel Zuckerman	4040 Lincoln St	Chicago	Illinois
Tina Zuckerman	4141 Taylor St	Chicago	Illinois
Victor Zuckerman	4242 Jackson St	Chicago	Illinois
Wendy Zuckerman	4343 Adams St	Chicago	Illinois
Xavier Zuckerman	4444 Franklin St	Chicago	Illinois
Yvonne Zuckerman	4545 Grant St	Chicago	Illinois
Zoe Zuckerman	4646 Hayes St	Chicago	Illinois

ERADICATION OF RIBES IN GEORGIA
IN NATIONAL FOREST

BY YEARS

TABLE 8
- - -

Year	Acreage Worked	No. Ribes Destroyed	No. Man- Days Labor	Cost
1933	8,112	0	no data	\$ 147.90
1934	6,642	235	" "	119.01
1935	125,976	737,906	2,027	7,308.00
1936	73,655	1,568,586	3,350	6,154.00
	214,385	2,306,727	5,377	12,728.91

THE UNIVERSITY OF CHICAGO LIBRARY

1911

Date	Author	Title	Subject	Class
1911	H. C. Brown	The University of Chicago	Library	1001
1911	H. C. Brown	The University of Chicago	Library	1002
1911	H. C. Brown	The University of Chicago	Library	1003
1911	H. C. Brown	The University of Chicago	Library	1004
1911	H. C. Brown	The University of Chicago	Library	1005
1911	H. C. Brown	The University of Chicago	Library	1006
1911	H. C. Brown	The University of Chicago	Library	1007
1911	H. C. Brown	The University of Chicago	Library	1008
1911	H. C. Brown	The University of Chicago	Library	1009
1911	H. C. Brown	The University of Chicago	Library	1010

COST DATA FOR RIBES ERADICATION IN GEORGIA
BY PROJECT

1 9 3 6

TABLE 9

Project	Initial Working		Second Working		Both Workings	
	Total Cost	Cost Per A	Total Cost	Cost Per A.	Total Cost	Cost Per A.
W. P. A.	8700.04	.079	350.00	2.25	9050.04	.083

This was the only project in 1936.

TABLE 10 SUMMARY OF DATA ON TOTAL COST OF RIBES ERADICATION 1933 - 1936, BY PROJECTS

Project	1933	1934	1935	1936	Total all Years
W. P. A.	\$ 0	\$ 0	\$ 7,603.78	\$9,050.04	\$16,653.82
P. W. A.	0	3788.36	2,701.50	0	6,489.86
E. C. W.	162.65	119.01	0	0	281.66
Total	162.65	3907.37	10,305.28	9,050.04	\$23,425.34

TABLE 11 COST PER ACRE FOR RIBES ERADICATION 1932 - 1936 BY PROJECTS

Project	1933	1934	1935	1936	Total All Years
W. P. A	0	\$ 0	\$0.061	\$0.083	\$0.071
P. W. A	0	\$0.029	0.055	0	0.036
E. C. W	0.184	0.018	0	0	0.018
Total	.0184	0.029	0.059	0.083	0.055

TABLE 12 COST DATA FOR RIBES ERADICATION IN GEORGIA
BY WORKING AND YEAR 1933 - 1936

Program	1933	1934	1935	1936	Total
Initial Work	\$ 0	\$ 0	\$ 0	\$ 0	0
W. P. A	0	0	7,603.73	8700.04	16303.92
P. W. A	0	3788.36	2,701.50	0	6489.86
E. C. W	162.65	119.01	0	0	281.66
Total-Initial	162.65	3907.37	10,305.28	8700.04	23075.34
Rework					
W. P. A	0	0	0	350.00	350.00
P. W. A	0	0	0	0	0
E. C. W	0	0	0	0	0
Total	\$ 0	\$ 0	\$ 0	\$ 350.00	\$ 350.00
Rework					
GRAND TOTAL					
ALL WORK	\$162.65	\$3907.37	\$10,305.28	\$9050.04	\$23425.34

TABLE 13 SHOWING WILD RIBES AND MAN-DAYS PER ACRE,
IN ERADICATION, BY PROJECTS, 1936

Project	Ribes Per Acre	Man-Days Per Acre
W. P. A	16.1	.033

TABLE 14 SHOWING RIBES PER ACRE AND MAN-DAYS PER ACRE,
BY PROJECTS 1933-1936

Project	Ribes Per Acre	Man-Days Per Acre
W. P. A	11.3	.028
P. W. A	0.14	.004
E. C. W	0.01	.014
All Projects	6.32	.017

RIBES ERADICATION IN GEORGIA
ACCORDING TO YEAR AND KIND OF BUSH

Year	Wild	Cultivated	Total
1933	0	0	0
1934	0	12,744	12,744
1935	832,193 (1)	17,077	849,270
1936	1,764,305 (2)	46,571	1,810,876
Totals	2,596,498 (3)	76,392 (3)	2,672,890

- (1) This is a revised and corrected figure and is not the same as given in my 1935 Annual Report.
- (2) This does not agree with data in the Omnibus Table 1, for 1936, but latter figure 1790,294 for wild Ribes included correction to 1935 figures.
- (3) The total figures agree with that reported in Omnibus table IIA on page 5 of this report for period 1918 to 1936 inclusive.

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MARYLAND

TABLE 1 SHOWING ERADICATION OF WILD RIBES IN MARYLAND BY PROJECTS, 1936

Program	Acreage Worked	No. Ribes Destroyed	No. of man-days labor	% of Total Acreage Worked	Ribes per Acre
WPA	29,801	439,221	3,346	98	14.7
ECW	182	30,765	118	1	169.
ARA	185	74,000	149	1	400.
Totals	30,168	543,986	3,613	100	18.
* WPA and ARA - 8 hour days. ECW - 7 hr. days					

TABLE 2 SHOWING ERADICATION OF WILD RIBES IN MARYLAND, BY FIRST, SECOND AND THIRD WORKINGS, 1936

Working	Acreage Worked	No. Ribes Destroyed	No. of man-days labor	Ribes per Acre	Man-days per Acre
Initial	22,281	511,614	2,681	22.9	.12
1st Rework	1,899	21,894	434	11.	.22
2nd Rework	5,988	10,478	498	1.7	.08
Totals	30,168	543,986	3,613	18.	.11

TABLE 3 SHOWING RIBES ERADICATION IN MARYLAND ACCORDING TO OWNERSHIP OF LAND, 1936

Ownership	Project	Acreage Worked	No. of Ribes Destroyed			No. of man-days labor
			Wild	Culti.	Total	
National	ARA	185	74,000	0	74,000	149
State	ECW and WPA	1444	14,348	20	14,368	400
Private	WPA	28539	455,638	1276	456,914	3064
Totals		30168	543,986	1296	545,282	3613

MARYLAND

TABLE 4 SUMMARY OF RIBES ERADICATION IN MARYLAND BY YEARS, 1932 - 1936

Year	Acreage Worked	No. of Ribes Destroyed	No. of man-days labor	No. of Ribes per A.	Man-Days per Acre
1932	800	1	-	.001	-
1933	1,890	187,470	316	99.04	0.17
1934	107,164	966,137	2,498	9.01	0.02
1935	42,862	699,457	3,700	16.31	0.09
1936	30,168	545,282	3,613	18.	0.11
Totals	182,884	2,398,347	10,127	13.1	0.06

TABLE 5 SUMMARY OF ERADICATION RESULTS IN MARYLAND 1932-1936 BY PROGRAMS

Program	Acreage Worked 1932-1936	No. of Ribes Destroyed	No. of man-days labor	% of Total Acreage Worked
Regular	800	1	-	0.4
WPA	48,288	749,636	5,116	26.4
PWA	127,436	1,193,379	3,589	69.7
ECW	6,175	381,331	1,273	3.4
ARA	185	74,000	149	0.1
Totals	182,884	2,398,347	10,127	100.0

TABLE 6 SHOWING ERADICATION OF ALL RIBES IN MARYLAND BY INITIAL, FIRST AND SECOND REWORKINGS -1932-1936

Working	Acreage Worked	No. of Ribes Destroyed	No. of man-days labor	Ribes per Acre
Initial	155,925	2,140,662	7,551	13.6
1st Rework	20,971	247,207	2,078	11.7
2nd Rework	5,988	10,478	498	1.7
Totals	182,884	2398347	10,127	13.1

Table 1

Table 1 shows the results of the first experiment. The data are presented in the following table.

Time (min)	Temperature (°C)	Pressure (atm)	Volume (L)	Mass (g)	Density (g/L)
0	20.0	1.00	1.00	1.00	1.00
10	21.0	1.02	1.01	1.02	1.01
20	22.0	1.04	1.02	1.04	1.02
30	23.0	1.06	1.03	1.06	1.03
40	24.0	1.08	1.04	1.08	1.04
50	25.0	1.10	1.05	1.10	1.05
60	26.0	1.12	1.06	1.12	1.06
70	27.0	1.14	1.07	1.14	1.07
80	28.0	1.16	1.08	1.16	1.08
90	29.0	1.18	1.09	1.18	1.09
100	30.0	1.20	1.10	1.20	1.10

Table 2 shows the results of the second experiment. The data are presented in the following table.

Time (min)	Temperature (°C)	Pressure (atm)	Volume (L)	Mass (g)	Density (g/L)
0	20.0	1.00	1.00	1.00	1.00
10	21.0	1.02	1.01	1.02	1.01
20	22.0	1.04	1.02	1.04	1.02
30	23.0	1.06	1.03	1.06	1.03
40	24.0	1.08	1.04	1.08	1.04
50	25.0	1.10	1.05	1.10	1.05
60	26.0	1.12	1.06	1.12	1.06
70	27.0	1.14	1.07	1.14	1.07
80	28.0	1.16	1.08	1.16	1.08
90	29.0	1.18	1.09	1.18	1.09
100	30.0	1.20	1.10	1.20	1.10

Table 3 shows the results of the third experiment. The data are presented in the following table.

Time (min)	Temperature (°C)	Pressure (atm)	Volume (L)	Mass (g)	Density (g/L)
0	20.0	1.00	1.00	1.00	1.00
10	21.0	1.02	1.01	1.02	1.01
20	22.0	1.04	1.02	1.04	1.02
30	23.0	1.06	1.03	1.06	1.03
40	24.0	1.08	1.04	1.08	1.04
50	25.0	1.10	1.05	1.10	1.05
60	26.0	1.12	1.06	1.12	1.06
70	27.0	1.14	1.07	1.14	1.07
80	28.0	1.16	1.08	1.16	1.08
90	29.0	1.18	1.09	1.18	1.09
100	30.0	1.20	1.10	1.20	1.10

MARYLAND

TABLE 7 SHOWING RIBES ERADICATION IN MARYLAND ACCORDING TO OWNERSHIP OF LAND 1932 - 1936

Ownership of Land	Acreage Worked	No. Ribes Destroyed	No. Man-Days Labor	No. Ribes per A.	Man-Days per Acre
National	185	74,000	149	400	.80
State	26,567	711,926	2297	26.7	.09
Private	156,132	1,612,421	7681	10.3	.05
Totals	182,884	2,398,347	10127	13.1	.06

TABLE 8 COST DATA FOR RIBES ERADICATION IN MARYLAND BY PROJECT 1936

Program	Initial	Second Working	Third Working	Total
WPA	\$7,462.51	\$1,000.00	\$1,300.00	\$9,762.51
ARA*	323.14	-	-	323.14
ECW**	118.00	-	-	118.00

Total \$7,903.65 \$1,000.00 \$1,300.00 \$10,203.65
 * Based on 1/9 of the hours at 31.6¢ per hour, other at 26.6¢ per hour.
 **Based on \$1.00 per day.

TABLE 9 COST PER ACRE FOR RIBES ERADICATION BY PROJECTS IN 1936

Program	Initial Work	First Rework	Second Rework	Total
WPA	\$0.34	\$0.54	\$0.21	\$0.32
ARA	1.75	-	-	1.752
ECW	0.64	-	-	0.648
Average All Programs	0.36	\$0.54	\$0.21	\$0.33

MARYLAND

TABLE 10 COST DATA FOR RIBES ERADICATION BY YEARS
1932 - 1936

Program	1932	1933	1934	1935	1936	Total
Regular	\$26.35	\$ -		\$ -	-	\$ 26.35
W. P. A.	-	-		5196.36	\$9762.51	\$14958.87
P. W. A.	-	1684.95	8131.78	4046.89	-	13863.62
A. R. A.	-	-	-	-	323.14	323.14
E. C. W.	-	-	292.00	863.00	118.00	1273.00
Totals	\$26.35	\$1684.95	\$8423.78	\$10106.25	\$10203.65	\$30444.98

TABLE 11 COST PER ACRE FOR RIBES ERADICATION IN MARYLAND BY
PROJECT 1932 - 1936.

Program	1932	1933	1934	1935	1936	Total All Programs
Regular	\$0.033	-	-	\$ -	\$ -	\$0.033
W. P. A.	-	-	-	0.281	0.32	0.31
P. W. A.	-	\$0.89	\$0.076	0.217	-	0.131
ARA	-	-	-	-	1.752	1.752
E. C. W.	-	-	1.12	0.15	0.648	0.206
Average	0.033					
All Programs		\$0.89	\$0.077	\$0.241	\$0.33	\$0.16

TABLE 12 COST DATA FOR ERADICATION IN MARYLAND BY WORKING
AND YEAR 1932 - 1936.

Program	1932	1933	1934	1935	1936	Total
INITIAL WORK						
Regular	\$26.35	\$				\$26.35
W. P. A				\$5196.36	\$7462.51	\$12658.87
P. W. A		1684.95	7927.05	137.71		9749.71
A. R. A.					323.14	323.14
E. C. W.			292.00	288.00	118.00	698.00
Total						
Initial	\$26.35	\$1684.95	\$8219.05	\$5622.07	\$7903.65	\$23456.07

1900-1901

Year	1900	1901	1902	1903	1904	1905
Jan	100	100	100	100	100	100
Feb	100	100	100	100	100	100
Mar	100	100	100	100	100	100
Apr	100	100	100	100	100	100
May	100	100	100	100	100	100
Jun	100	100	100	100	100	100
Jul	100	100	100	100	100	100
Aug	100	100	100	100	100	100
Sep	100	100	100	100	100	100
Oct	100	100	100	100	100	100
Nov	100	100	100	100	100	100
Dec	100	100	100	100	100	100

1902-1903

Year	1902	1903	1904	1905	1906	1907
Jan	100	100	100	100	100	100
Feb	100	100	100	100	100	100
Mar	100	100	100	100	100	100
Apr	100	100	100	100	100	100
May	100	100	100	100	100	100
Jun	100	100	100	100	100	100
Jul	100	100	100	100	100	100
Aug	100	100	100	100	100	100
Sep	100	100	100	100	100	100
Oct	100	100	100	100	100	100
Nov	100	100	100	100	100	100
Dec	100	100	100	100	100	100

1904-1905

Year	1904	1905	1906	1907	1908	1909
Jan	100	100	100	100	100	100
Feb	100	100	100	100	100	100
Mar	100	100	100	100	100	100
Apr	100	100	100	100	100	100
May	100	100	100	100	100	100
Jun	100	100	100	100	100	100
Jul	100	100	100	100	100	100
Aug	100	100	100	100	100	100
Sep	100	100	100	100	100	100
Oct	100	100	100	100	100	100
Nov	100	100	100	100	100	100
Dec	100	100	100	100	100	100

TABLE 12 COST DATA FOR ERADICATION IN MARYLAND BY
(Continued) WORKING AND YEAR 1932-1936

Project	1932	1933	1934	1935	1936	Total
FIRST REWORK <u>PWA</u>			\$ 204.73	\$ 3909.18		\$ 4113.91
W. P. A.					\$ 1000.00	1000.00
E. C. W.				575.00		575.00
Total First REWORK			\$ 204.73	\$ 4484.18	\$ 1000.00	\$ 5688.91
SECOND REWORK						
W. P. A					\$ 1300.00	\$ 1300.00
GRAND TOTAL						
ALL WORK	\$26.35	\$1684.95	\$8423.78	\$10106.25	\$10203.65	\$30444.98

TABLE 13 COST DATA FOR RIBES ERADICATION IN MARYLAND BY
INITIAL, FIRST AND SECOND REWORK BY PROGRAMS
1932-1936

Program	Initial	First Rework	Second Rework	Total
Regular	\$26.35	\$ -	\$ -	\$ 26.35
WPA	12658.87	1000.00	1300.00	14,958.87
PWA	9749.71	4113.91	-	13,863.62
ARA	323.14	-	-	323.14
ECW	698.00	575.00	-	1,273.00
Totals	\$ 23456.07	\$ 5688.91	\$1300.00	\$30,444.98

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MARYLAND

TABLE 14 SHOWING WILD RIBES AND MAN-DAYS PER ACRE IN
ERADICATION BY PROJECTS 1936

Project	Ribes per Acre	Man-Days per Acre
W. P. A	14.7	.11
A. R. A	400	.80
E. C. W	169	.64
Average	18	.12

TABLE 15 SHOWING RIBES, WILD AND CULTIVATED, BY YEARS,
1932 - 1936

Year	RIBES		Total
	Wild	Cultivated	
1932	0	1	1
1933	187,465	5	187,470
1934	965,075	1062	966,137
1935	697,553	1904	699,457
1936	543,986	1296	545,282
Totals	2,394,079	4268	2,398,347

TABLE 16 AREA WORKED 1936 BY PROGRAMS, BY INITIAL, FIRST
AND SECOND REWORKING

Program	Initial	First Reworking	Second Reworking	Total
W. P. A	21,914	1,899	5,988	29,801
E. C. W	182	-	-	182
ARA	185	-	-	185
Totals	22,281	1,899	5,988	30,168

1. 1911		2. 1912		3. 1913	
1911		1912		1913	
1	1	1	1	1	1
2	2	2	2	2	2
3	3	3	3	3	3
4	4	4	4	4	4
5	5	5	5	5	5
6	6	6	6	6	6
7	7	7	7	7	7
8	8	8	8	8	8
9	9	9	9	9	9
10	10	10	10	10	10
11	11	11	11	11	11
12	12	12	12	12	12
13	13	13	13	13	13
14	14	14	14	14	14
15	15	15	15	15	15
16	16	16	16	16	16
17	17	17	17	17	17
18	18	18	18	18	18
19	19	19	19	19	19
20	20	20	20	20	20
21	21	21	21	21	21
22	22	22	22	22	22
23	23	23	23	23	23
24	24	24	24	24	24
25	25	25	25	25	25
26	26	26	26	26	26
27	27	27	27	27	27
28	28	28	28	28	28
29	29	29	29	29	29
30	30	30	30	30	30
31	31	31	31	31	31
32	32	32	32	32	32
33	33	33	33	33	33
34	34	34	34	34	34
35	35	35	35	35	35
36	36	36	36	36	36
37	37	37	37	37	37
38	38	38	38	38	38
39	39	39	39	39	39
40	40	40	40	40	40
41	41	41	41	41	41
42	42	42	42	42	42
43	43	43	43	43	43
44	44	44	44	44	44
45	45	45	45	45	45
46	46	46	46	46	46
47	47	47	47	47	47
48	48	48	48	48	48
49	49	49	49	49	49
50	50	50	50	50	50
51	51	51	51	51	51
52	52	52	52	52	52
53	53	53	53	53	53
54	54	54	54	54	54
55	55	55	55	55	55
56	56	56	56	56	56
57	57	57	57	57	57
58	58	58	58	58	58
59	59	59	59	59	59
60	60	60	60	60	60
61	61	61	61	61	61
62	62	62	62	62	62
63	63	63	63	63	63
64	64	64	64	64	64
65	65	65	65	65	65
66	66	66	66	66	66
67	67	67	67	67	67
68	68	68	68	68	68
69	69	69	69	69	69
70	70	70	70	70	70
71	71	71	71	71	71
72	72	72	72	72	72
73	73	73	73	73	73
74	74	74	74	74	74
75	75	75	75	75	75
76	76	76	76	76	76
77	77	77	77	77	77
78	78	78	78	78	78
79	79	79	79	79	79
80	80	80	80	80	80
81	81	81	81	81	81
82	82	82	82	82	82
83	83	83	83	83	83
84	84	84	84	84	84
85	85	85	85	85	85
86	86	86	86	86	86
87	87	87	87	87	87
88	88	88	88	88	88
89	89	89	89	89	89
90	90	90	90	90	90
91	91	91	91	91	91
92	92	92	92	92	92
93	93	93	93	93	93
94	94	94	94	94	94
95	95	95	95	95	95
96	96	96	96	96	96
97	97	97	97	97	97
98	98	98	98	98	98
99	99	99	99	99	99
100	100	100	100	100	100

⊙ Average '33

Chart Showing Ribes Per Acre and Acres per Man-Day In Ribes Eradication by Projects for each Year, from 1933 to 1936 Inclusive.



1936 - MARYLAND

W. P. A.

Acres	29081
M-days	3346
Ribes	430517
Erad. Cost	\$9,762.51
Total Cost	\$16,480.96

1936 E. C. W.

Acres	182
M-days	118
Ribes	74000
Erad. Cost	\$118.00
Total Cost	\$118.00

Regular

Acres	185
M-days	149
Ribes	
Erad. Cost	\$323.14
Total Cost	\$323.14

1918 - 1936 Inclusive

W. P. A.

Acres	48288
M-days	5118
Ribes	749,636
Erad. Cost	\$14,958.87
Total Cost	\$23,576.62

E. C. W.

Acres	6,175
M-days	1,258
Ribes	381,331
Erad. Cost	\$1273.00
Total Cost	\$1273.00

1918 - 1936 P. W. A.

Acres	127,436
M-days	3,589
Ribes	11,933.79
Erad. Cost	\$13,863.62
Total Cost	\$22,165.19

Regular

Acres	985
M-days	149
Ribes	74001
Erad. Cost	\$349.49
Total Cost	\$5,239.95

Acreage	1/10 inch = 690 acres
m-days	" " = 75 m-days
Ribes destroyed	" " = 16000 Ribes
Erad. Cost	" " = \$275.00
Total cost	" " = \$275.00

"Regular" includes Resettlement Adm. H.E. Post 7/7/37

1932

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GRAPH SHOWING ERADICATION DATA FOR MAN-DAYS, BY YEARS
1932 to 1936 INCLUSIVE

1932
\$26.35 Expended
800 Acres Worked
Ribes Destroyed
Man-Days - no data

1933

LEGEND
Each, tenth inch = \$100.00 Expended
" " " = 1000.00 Acres Worked
" " " = 10,000 Bushes Pulled
" " " = 100 Man-Days Labor

1933
\$1,684.95 Expended
1,890 Acres Worked
187,470 Ribes bushes
316 Man-Days Labor

1934

1934
\$8,423.78 Expended
107,164 Acres Worked
966,457 Ribes bushes
pulled
2,498 m-days labor.

1935

1935
\$10,106.25 Expended
42,862 Acres Worked
699,457 Ribes pulled
3,700 Man-Days

1936

1936
\$10,203.65 Expended
30,168 Acres Worked
545,282 Ribes pulled
3,613 M-days labor.

Graph Showing Cumulative Acreage Of White
Pine Protected by Years And Working
1932 - 1936 Incl.



Progress in Blister Rust Control

In Maryland 1932 to 1936 Inclusive

Year	Area Initially Worked (Acres)	Area of First Rework (Acres)	Second Rework	Total
1932	800	0	0	800
1933	1,890	0	0	1,890
1934	106,695	469	0	107,164
1935	24,259	18,603	0	42,862
1936	22,281	1,899	5,988	30,168
	155,925	20,971	5,988	182,884

NORTH CAROLINA

TABLE 1 SHOWING RIBES ERADICATION IN NORTH CAROLINA, BY PROJECTS
1936

Project	Acreage Worked	No. of Ribes Destroyed			No. of man-days labor	Ribes per Acre	Percentage Total Acreage Worked
		Wild	Culti.	Total			
Regular	5,195	790	2,269	3,059	105	0.577	0.6
W. P. A	971,478	350,681	348,380	699,061	14,431	0.719	99.4
P. W. A	0	0	0	0	0	0	0
E. C. W.	0	0	0	0	0	0	0
Totals	976,673	351,471	350,649	702,120	14,536	0.709	100.0

TABLE 2 SHOWING RIBES ERADICATION IN NORTH CAROLINA BY WORKING IN 1936

Working	Acreage Worked	No. of Ribes Destroyed			No. of Man-Days Labor	Ribes Per Acre
		Wild	Cultivated	Total		
First	760,467	321,160	313,232	634,392	12,046	0.835
Second	216,206	30,311	37,417	67,728	2,490	0.313
Totals	976,673	351,471	350,649	702,120	14,536	0.709

TABLE 3 SHOWING RIBES ERADICATION IN NORTH CAROLINA ACCORDING TO
OWNERSHIP OF LAND IN 1936

Ownership	Acreage Worked	No. of Ribes Destroyed			No. Man Days Labor	Ribes Per Acre
		Wild	Cultivated	Total		
Nat'l Forest	29,332	242	2,651	2,893	160	0.098
State and Private	947,341	351,229	347,998	699,227	14376	0.738
Totals	976,673	351,471	350,649	702,120	14,536	0.709

NORTH CAROLINA

TABLE 4 SHOWING SUMMARY OF RIBES IN NORTH CAROLINA,
BY YEARS, 1933 to 1936

Year	Acreage Worked	No. of Ribes Destroyed	No. of Man-Days Labor	No. of Ribes Per Acre	No. of man-days per Acre
1933	29,570	360	415	0.01	0.01
1934	582,610	100,322	2,818	0.17	0.0048
1935	588,360	261,062	8,031	0.44	0.0136
1936	976,673	702,120	14,536	0.709	0.015
Totals	2,177,213	1,063,864	25,800	0.489	0.011

TABLE 5 SUMMARY OF RIBES ERADICATION IN NORTH CAROLINA,
BY PROJECTS, 1933 to 1936

Project	Acreage Worked	No. of Ribes Destroyed	No. of Man-Days Labor	No. of Ribes Per Acre	No. of man-days per Acre
Regular	5,195	3,059	105	0.577	0.0202
W.P.A	1212,667	909,300	21,174	0.749	0.017
P. W.A	905,183	150,876	3,951	0.16	0.004
E.C. W	54,168	629	570	0.11	0.010
Totals	2177,213	1063,864	25,800	0.489	0.011

TABLE 6 SUMMARY OF RIBES ERADICATION IN NORTH CAROLINA,
BY FIRST AND SECOND WORKING 1933 - 1936

Working	Acreage Worked	No. of Ribes Destroyed	No. of man-days Labor	No. of Ribes Per A.	No. of man-days per Acre.
First	1,945,607	992,017	23,163	.50	0.012
Second	231,606	71,847	2,637	.31	0.011
Totals	2,117,213	1063,864	25,800	.489	0.011

1911 1912

1911
 1912

1911	1912	1913	1914	1915	1916
1911	1912	1913	1914	1915	1916
1911	1912	1913	1914	1915	1916
1911	1912	1913	1914	1915	1916
1911	1912	1913	1914	1915	1916
1911	1912	1913	1914	1915	1916

1911
 1912

1911	1912	1913	1914	1915	1916
1911	1912	1913	1914	1915	1916
1911	1912	1913	1914	1915	1916
1911	1912	1913	1914	1915	1916
1911	1912	1913	1914	1915	1916
1911	1912	1913	1914	1915	1916

1911
 1912

1911	1912	1913	1914	1915	1916
1911	1912	1913	1914	1915	1916
1911	1912	1913	1914	1915	1916
1911	1912	1913	1914	1915	1916
1911	1912	1913	1914	1915	1916
1911	1912	1913	1914	1915	1916

TABLE 7 SUMMARY OF RIBES ERADICATION IN NORTH CAROLINA
ACCORDING TO OWNERSHIP OF LANDS 1933-1936

Ownership of Land	Acreage Worked	No. of Ribes Destroyed	No. of man-days labor	No. of Ribes Per Acre	No. of Man-Days Per A.
Nat'l Forests	81,490	3,389	718	0.040	.009
" Parks	2,010	133	12	0.066	.006
Total Nat'l Lands	83,500	3,522	730	0.042	.009
State and Private Lands	2,093,713	1,060,342	25,070	0.506	.012
Totals	2,177,213	1,063,864	25,800	0.489	0.011

TABLE 8 SUMMARY OF RIBES ERADICATION IN NORTH CAROLINA
IN NATIONAL FORESTS, BY YEARS 1933-to 1936

Year	Acreage Worked	No. of Ribes Destroyed	No. of Man-Days Labor	Cost
1933	27,560	227	403	\$1,627.65
1934	24,598	269	155	786.20
1935	0	0	0	0
1936	29,332	2,893	160	474.08 (1)
Totals	81,490	3,389	718	\$2,887.93

(1) Includes \$120.00 for CCC labor and \$334.08 of W. P. A. funds.

TABLE 9 SUMMARY OF WILD AND CULTIVATED RIBES IN NORTH CAROLINA
BY YEARS. 1933 to 1936

Year	Wild Bushes	Cultivated Bushes	Total Ribes
1933	360	0	360
1934	14,823	85,499	100,322
1935	147,954	113,108	261,062
1936	351,471	350,649	702,120
Totals	514,608	549,256	1,063,864

NORTH CAROLINA

TABLE 10 COST DATA FOR RIBES ERADICATION IN NORTH CAROLINA
IN 1936

Project	Initial Work	Rework	Total
Regular	\$ 225.00	\$ 97.00	\$ 322.00
W. P. A	26,142.70	11,204.01	37,346.71
Totals	\$26,367.70	\$11,301.01	\$37,668.71

TABLE 11 COST PER ACRE FOR RIBES ERADICATION IN NORTH
CAROLINA IN 1936

Project	Initial Work	Rework	Total
Regular	\$0.050	\$0.137	\$0.062
W. P. A	0.0347	0.0516	0.038
Average Cost Per Acre	\$0.0347	\$0.0518	\$0.0386

TABLE 12 COST FOR RIBES ERADICATION IN NORTH CAROLINA,
BY YEARS 1933 to 1936

Project	1933	1934	1935	1936	All Years
Regular	\$ 0	0	\$ 0	\$ 322.00	\$ 322.00
W. P. A		0	14779.59	37,346.71	52,126.30
P. W. A		14537.24	8388.24	0	22,925.48
E. C. W	1828.48	786.20	0	0	2,614.68
Totals	\$1828.48	\$15323.44	23167.83	\$37,668.71	\$77,988.46

Table 1

Table 1. Summary of the data collected during the experiment. The data were collected from the following sources:

Source	Value	Unit	Notes
Source 1	1.2	g	
Source 2	1.5	g	
Source 3	1.8	g	
Source 4	2.1	g	
Source 5	2.4	g	
Source 6	2.7	g	
Source 7	3.0	g	
Source 8	3.3	g	
Source 9	3.6	g	
Source 10	3.9	g	
Source 11	4.2	g	
Source 12	4.5	g	
Source 13	4.8	g	
Source 14	5.1	g	
Source 15	5.4	g	
Source 16	5.7	g	
Source 17	6.0	g	
Source 18	6.3	g	
Source 19	6.6	g	
Source 20	6.9	g	
Source 21	7.2	g	
Source 22	7.5	g	
Source 23	7.8	g	
Source 24	8.1	g	
Source 25	8.4	g	
Source 26	8.7	g	
Source 27	9.0	g	
Source 28	9.3	g	
Source 29	9.6	g	
Source 30	9.9	g	
Source 31	10.2	g	
Source 32	10.5	g	
Source 33	10.8	g	
Source 34	11.1	g	
Source 35	11.4	g	
Source 36	11.7	g	
Source 37	12.0	g	
Source 38	12.3	g	
Source 39	12.6	g	
Source 40	12.9	g	
Source 41	13.2	g	
Source 42	13.5	g	
Source 43	13.8	g	
Source 44	14.1	g	
Source 45	14.4	g	
Source 46	14.7	g	
Source 47	15.0	g	
Source 48	15.3	g	
Source 49	15.6	g	
Source 50	15.9	g	
Source 51	16.2	g	
Source 52	16.5	g	
Source 53	16.8	g	
Source 54	17.1	g	
Source 55	17.4	g	
Source 56	17.7	g	
Source 57	18.0	g	
Source 58	18.3	g	
Source 59	18.6	g	
Source 60	18.9	g	
Source 61	19.2	g	
Source 62	19.5	g	
Source 63	19.8	g	
Source 64	20.1	g	
Source 65	20.4	g	
Source 66	20.7	g	
Source 67	21.0	g	
Source 68	21.3	g	
Source 69	21.6	g	
Source 70	21.9	g	
Source 71	22.2	g	
Source 72	22.5	g	
Source 73	22.8	g	
Source 74	23.1	g	
Source 75	23.4	g	
Source 76	23.7	g	
Source 77	24.0	g	
Source 78	24.3	g	
Source 79	24.6	g	
Source 80	24.9	g	
Source 81	25.2	g	
Source 82	25.5	g	
Source 83	25.8	g	
Source 84	26.1	g	
Source 85	26.4	g	
Source 86	26.7	g	
Source 87	27.0	g	
Source 88	27.3	g	
Source 89	27.6	g	
Source 90	27.9	g	
Source 91	28.2	g	
Source 92	28.5	g	
Source 93	28.8	g	
Source 94	29.1	g	
Source 95	29.4	g	
Source 96	29.7	g	
Source 97	30.0	g	
Source 98	30.3	g	
Source 99	30.6	g	
Source 100	30.9	g	

The data were collected from the following sources:

Source 1: 1.2 g

Source 2: 1.5 g

Source 3: 1.8 g

Source 4: 2.1 g

Source 5: 2.4 g

Source 6: 2.7 g

Source 7: 3.0 g

Source 8: 3.3 g

Source 9: 3.6 g

Source 10: 3.9 g

Source 11: 4.2 g

Source 12: 4.5 g

Source 13: 4.8 g

Source 14: 5.1 g

TABLE 13 COST PER ACRE FOR RIBES ERADICATION IN NORTH CAROLINA BY PROJECTS, 1933 to 1936

Project	1933	1934	1935	1936	Average All Years
Regular	\$ 0	\$ 0	\$0	\$0.062	\$0.062
W. P. A	0	0	0.061	0.026	0.0338
P. W. A	0	0.026	0.025	0	0.025
E. C. W	0.061	0.032	0	0	0.048
Average cost for All Projects	\$0.061	\$0.026	\$0.039	\$0.038	\$0.0358

TABLE 14 COST DATA FOR RIBES ERADICATION IN NORTH CAROLINA, ACCORDING TO OWNERSHIP OF LAND

Ownership of Land	Total Cost		Cost Per Acre	
	1936	1933 to 1936	1936	1933 to 1936
National Forest	\$ 474.08	\$ 2,887.93	\$0.016	\$0.035
National Park	0	200.83	0	0.099
All National Lands	474.08	3,088.76	0.016	.037
State and Private Lands	37194.63	74,899.74	0.0397	.0358
Total all Lands	\$37,668.71	\$77,988.46	\$0.0386	\$.0358

TABLE 1. *Estimated values of the parameters of the model for the different types of soil.*

Soil type	α	β	γ	δ	ϵ
1	0.001	0.001	0.001	0.001	0.001
2	0.001	0.001	0.001	0.001	0.001
3	0.001	0.001	0.001	0.001	0.001
4	0.001	0.001	0.001	0.001	0.001
5	0.001	0.001	0.001	0.001	0.001
6	0.001	0.001	0.001	0.001	0.001
7	0.001	0.001	0.001	0.001	0.001
8	0.001	0.001	0.001	0.001	0.001
9	0.001	0.001	0.001	0.001	0.001
10	0.001	0.001	0.001	0.001	0.001

TABLE 2. *Estimated values of the parameters of the model for the different types of soil.*

Soil type	α	β	γ	δ	ϵ
1	0.001	0.001	0.001	0.001	0.001
2	0.001	0.001	0.001	0.001	0.001
3	0.001	0.001	0.001	0.001	0.001
4	0.001	0.001	0.001	0.001	0.001
5	0.001	0.001	0.001	0.001	0.001
6	0.001	0.001	0.001	0.001	0.001
7	0.001	0.001	0.001	0.001	0.001
8	0.001	0.001	0.001	0.001	0.001
9	0.001	0.001	0.001	0.001	0.001
10	0.001	0.001	0.001	0.001	0.001

NORTH CAROLINA

TABLE 15 DETAILED COST DATA FOR RIBES ERADICATION IN NORTH CAROLINA,
BY WORKING AND YEAR 1933 to 1936 INCLUSIVE

Project	1933	1934	1935	1936	Total
INITIAL WORK					
Regular \$				225.00	225.00
				225.00	
W. P. A			14,779.59	26,142.70	40,922.29
P. W. A		14,537.24	7,557.68	0	22,094.92
E. C. W	1,828.48	786.20	0	0	2,614.68
Total	\$1,828.48	\$15,323.44	\$22,337.27	\$26,367.70	\$65,856.89
INITIAL WORK					
REWORK					
Regular				97.00	97.00
W. P. A	0	0	0	11,204.01	11,204.01
P. W. A.	0	0	830.56	0	830.56
E. C. W.	0	0	0	0	0
Total					
REWORK	0	0	\$ 830.56	\$ 11,301.01	\$12,131.57
GRAND TOTAL					
ALL WORK	\$1,828.48	\$15,323.44	\$23,167.83	\$ 37,668.71	\$77,988.46

TABLE 16 SUMMARY OF COST DATA FOR RIBES ERADICATION IN NORTH CAROLINA,
BY WORKING AND PROJECT 1933 - 1936 INCLUSIVE

Project	Initial	Rework	Total
Regular	\$ 225.00	\$ 97.00	\$ 322.00
W. P. A	40,922.29	11,204.01	52,126.30
P. W. A.	22,094.92	830.56	22,925.48
E. C. W.	2,614.68	0	2,614.68
Totals	\$ 65,856.89	\$12,131.57	\$77,988.46

TENNESSEE

TABLES GIVING DATA ON RIBES ERADICATION IN 1936, AND IN PREVIOUS YEARS,
CLASSIFIED BY PROJECT, WORKING, OWNERSHIP AND YEAR

TABLE 1 SHOWING RIBES ERADICATION IN TENNESSEE, BY PROJECT IN 1936

Project	Acreage Worked	Number of Ribes Destroyed			No. of man-Days Labor	Average No. of	
		Wild	Culti.	Total		Ribes per A.	man-days per A.
W. P. A	102,263	1265,527	27,444	1,293,016	4739.25	12.64	0.0463
E. C. W	180	22,122	0	22,122	18.70	123.0	0.1039
TOTALS	102,443	1287,694	27,444	1,315,138	4757.95	12.83	0.0464

TABLE 2 SHOWING RIBES ERADICATION IN TENNESSEE BY WORKING IN 1936

Working	Acreage Worked	Number of Ribes Destroyed			No. of mandays labor	Average No. of	
		Wild	Culti.	Total		Ribes per A	man-days per A.
First	100,515	1,232,578	27,444	1260,022	4557.86	11.5	0.045
Second	1,928	55,116	0	55,116	200.09	28.6	.104
Totals	102,443	1,287,694	27,444	1315,138	4757.95	12.83	0.0464

TABLE 3 SHOWING RIBES ERADICATION IN TENNESSESSS ACCORDING TO OWNERSHIP
IN 1936

Ownership	Acreage Worked	Number of Ribes Destroyed			No. of man-days labor	Average Number of	
		Wild	Culti.	Total		Ribes per A.	man-days per A.
Nat'l For.	860	258,796	3,134	261,930	89.2	304.	0.1035
" Park	0	0	0	0	0	0	0
Tot.Federal	860	258,796	3,134	261,930	89.2	304.	0.1035
State and Private	101,583	1028,898	24310	1053,208	4668.75	10.37	0.0459
Total all Lands	102,443	1287,694	27444	1315,138	4757.95	12.83	.0464

TABLE 4 SUMMARY OF RIBES ERADICATION IN TENNESSEE BY YEARS, 1933 to 1936 Incl.

Year	Acreage Worked	NUMBER of Ribes Destroyed			No. of man-days labor	Average Number of	
		Wild	Culti.	Total		Ribes per A.	Man-D per A.
1933	10,720	62,832	40	62,872	382	5.86	0.035
1934	101,588	64,041	1,255	65,296	1,230	0.64	0.012
1935	48,647	321,636	2,840	324,476	1,649.6	6.67	0.034
1936	102,443	1,287,694	27,444	1,315,138	4,757.95	12.84	0.046
Totals	263398	1,736,203	31,579	1,767,782	8,019.6	6.4	0.031

Journal

Monday, June 1st, 1880. Left New York at 10:30 AM for
Savannah, Georgia, via the Atlantic Coast Line.

Arrived Savannah at 4:30 PM. Accommodated at the
Hotel Richmond.

Spent the evening at the Hotel Richmond. The
city is very beautiful and the people are very
friendly.

Left Savannah at 8:00 AM for Milledgeville, Georgia.
Arrived at 12:30 PM.

Spent the day in Milledgeville. The city is very
beautiful and the people are very friendly.

Left Milledgeville at 8:00 AM for Macon, Georgia.
Arrived at 12:30 PM.

Spent the day in Macon. The city is very
beautiful and the people are very friendly.

Left Macon at 8:00 AM for Columbus, Georgia.
Arrived at 12:30 PM.

Spent the day in Columbus. The city is very
beautiful and the people are very friendly.

Left Columbus at 8:00 AM for Atlanta, Georgia.
Arrived at 12:30 PM.

Spent the day in Atlanta. The city is very
beautiful and the people are very friendly.

Left Atlanta at 8:00 AM for Savannah, Georgia.
Arrived at 12:30 PM.

Spent the day in Savannah. The city is very
beautiful and the people are very friendly.

Left Savannah at 8:00 AM for New York, Georgia.
Arrived at 12:30 PM.

Spent the day in New York. The city is very
beautiful and the people are very friendly.

Left New York at 8:00 AM for Savannah, Georgia.
Arrived at 12:30 PM.

Spent the day in Savannah. The city is very
beautiful and the people are very friendly.

Left Savannah at 8:00 AM for New York, Georgia.
Arrived at 12:30 PM.

Spent the day in New York. The city is very
beautiful and the people are very friendly.

Left New York at 8:00 AM for Savannah, Georgia.
Arrived at 12:30 PM.

Spent the day in Savannah. The city is very
beautiful and the people are very friendly.

TENNESSEE

Well Kept Farm Woodlot of White Pine, One mile
West of Mountain City, Tennessee



BRC 7846 (Photo 29, Roll 11,) by Dr. S. B. Fracker

53,400 Acres of White Pine Have Been Initially Protected
in Tennessee through the Eradication of 1,736,203 Wild
Ribes and 31, 519 cultivated bushes since January 1, 1933.

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TENNESSEE

TABLE 5 SUMMARY OF RIBES ERADICATION IN TENNESSEE BY PROJECTS
1933 to 1936 INCLUSIVE

Project	Acreage Worked	Number of Ribes Destroyed			No. of man- days labor	Average No. of	
		Wild	Culti.	Total		Ribes per A.	man-days per Acre
W. P. A	117,702	1,458,417	29,521	1,487,938	5847.25	12.7	0.0497
P. W. A	122,340	166,695	1,914	168,609	1438.8	1.37	0.0117
E. C. W.	23,356	111,091	144	111,235	733.5	4.76	0.0314
Totals	263,398	1,736,203	31,579	1,767,782	8019.6	6.4	0.031

TABLE 6 SUMMARY OF RIBES ERADICATION IN TENNESSEE BY WORKING
1933 to 1936 INCLUSIVE

Working	Acreage Worked	Number of Ribes Destroyed			No. of man-days labor	Average No. of	
		Wild	Culti.	Total		Ribes per A.	Man-Days per Acre
First	260,591	1,623,859	31,579	1,655,438	7745.6	6.31	0.0297
Second	2,807	112,344	0	112,344	274.	40.0	0.0976
Totals	263,398	1,736,203	31,579	1,767,782	8019.6	6.4	0.031

TABLE 7 SHOWING RIBES ERADICATION IN NATIONAL FORESTS IN TENNESSEE,
BY YEARS 1933 to 1936 INCLUSIVE

Year	Acreage Worked	No. of Ribes Destroyed	No. of Man-Days Labor	Cost
1933	8,895	62,856	no data	\$ 848.68
1934	11,970	185	216	633.44
1935	0	0	0	0
1936	860	261,930	89.2	120.22
Totals	21,725	324,971	305.2	\$1,602.34

TABLE 8 SHOWING RIBES ERADICATION IN TENNESSEE ACCORDING TO OWNERSHIP
OF LANDS 1933 to 1936 INCLUSIVE

Ownership	Acreage Worked	No. of Ribes Destroyed	No. of Man-Days Labor	Cost
National Forests	21,725	324,971	305.2	\$ 1,602.34
" Parks	1,825	16	no data	200.15
Total Fed.	23,550	324,987	305.2	1,802.49
State & Private	239,848	1,442,795	7714.4	18,868.95
Totals	263,398	1,767,782	8019.6	\$20,671.44

TENNESSEE

TABLE 9 COST DATA FOR RIBES ERADICATION IN TENNESSEE,
BY PROJECTS IN 1936

Project	Initial Work	Rework	Total
W. P. A	\$7,897.20	\$261.12	\$8,158.32
E. C. W	18.70	0	18.70
Totals	\$7,915.90	\$261.12	\$8,177.02

TABLE 10 COST PER ACRE FOR RIBES ERADICATION IN TENNESSEE
BY PROJECTS IN 1936

Project	Initial Work	Rework	Total
W. P. A.	\$0.079	\$0.135	\$0.08
E. C. W	0.104	0	0.104
Average	\$0.079	\$0.135	\$0.08

TABLE 11 COST DATA FOR RIBES ERADICATION IN TENNESSEE,
BY YEARS 1933 to 1936

Project	1933	1934	1935	1936	Total All Years
W. P. A	\$ -	-	\$2,001.29	\$8,158.32	\$10,159.61
P. W. A	-	\$6,251.73	2,399.23	-	8,650.96
E. C. W	1,048.83	720.09	73.25	18.70	1,860.87
Totals	\$1,048.83	\$6,971.82	\$4,473.77	\$8,177.02	\$20,671.44

TABLE 12 COST PER ACRE FOR RIBES ERADICATION IN TENNESSEE
BY PROJECTS

Project	1933	1934	1935	1936	Average All Years
W. P. A	\$ -	\$ -	\$0.144	\$ 0.08	\$0.086
P. W. A	0	0.069	0.073	-	0.070
E. C. W	.098	0.059	0.225	0.104	0.079
Average Cost per All Projects	\$0.098	\$0.068	\$0.092	\$0.08	\$0.078

TENNESSEE

Patch of Skunk Currants on Gentry Creek between
Mountain City, Tennessee and Damascus, Virginia



BRC 7843 (Photo 26, Roll 11,) by Dr. S. B. Fracker

Skunk Currants have been found near White Pine Only
in Johnson County Tennessee, Garrett County, Maryland
and Wythe County, Virginia

TABLE 13 Cost Data for Ribes Eradication
In Tennessee, by Working and Year

Project	1933	1934	1935	1936	Total
Initial					
WPA	\$ 0		\$2001.29	\$7897.20	\$ 9,898.49
PWA	0	6251.73	2086.10	0	8,337.83
ECW	1048.83	720.09	73.25	18.70	1,860.87
Total Initial	\$1048.83	\$6971.82	\$4160.64	\$7915.90	\$20,097.19
Rework					
WPA	0	0	0	261.12	261.12
PWA	0	0	313.13	0	313.13
ECW	0	0	0	0	
Total Rework	0	0	313.13	261.12	574.25
Grand Total	\$1048.83	\$6891.82	\$4473.77	\$8177.02	\$20,671.44

TABLE 14 Summary of Cost Data for Ribes Eradication
in Tennessee, By Working and Project
1933 to 1936 Inclusive

Project	Initial Work	Rework	Total
W. P. A.	\$9898.49	\$ 261.12	\$10,159.61
P. W. A.	8337.83	313.13	8,650.96
E. C. W.	1860.87	0	1,860.87
Total	\$20097.19	\$ 574.25	\$20,671.44

THE UNIVERSITY OF CHICAGO

NAME		ADDRESS		CITY	
1	Mr. J. H. Smith	1234 N. Dearborn	Chicago	Ill.	60610
2	Mr. W. E. Jones	5678 S. Michigan	Chicago	Ill.	60605
3	Mr. R. L. Brown	9012 W. Belmont	Chicago	Ill.	60633
4	Mr. T. M. White	3456 E. Lake	Chicago	Ill.	60640
5	Mr. G. K. Green	7890 N. Halsted	Chicago	Ill.	60630
6	Mr. F. D. Black	2345 S. State	Chicago	Ill.	60604
7	Mr. H. J. Gray	6789 W. Madison	Chicago	Ill.	60629
8	Mr. L. P. Hall	1012 E. Chicago	Chicago	Ill.	60611
9	Mr. M. S. King	4567 N. Lincoln	Chicago	Ill.	60641
10	Mr. N. T. Lee	8901 S. Halsted	Chicago	Ill.	60620
11	Mr. O. U. Miller	3210 W. Lake	Chicago	Ill.	60643
12	Mr. P. V. Wilson	7654 N. Dearborn	Chicago	Ill.	60612
13	Mr. Q. W. Young	2109 S. Michigan	Chicago	Ill.	60606
14	Mr. R. X. Zane	6543 E. Belmont	Chicago	Ill.	60647
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200	Mr. V. B. Ingram	3210 S. State	Chicago	Ill.	60605

TABLE 1. SHOWING ERADICATION OF RIBES IN VIRGINIA
BY PROJECTS 1936

Project	Acreage Worked	No. of Ribes Destroyed		No. of man-days labor 8 hr. day	Percent of Total Acreage Worked
		wild	culti.		
Regular	600	3,000	0	60.5	0.6
W. P. A	104,360	904,199	17,919	10118.5	96.7
E. C. W	2,992	103,512	6	2154.0	2.7
Totals	107,952	1010,711	17,925	12333.0	100.0 %

TABLE 2 SHOWING ERADICATION OF RIBES IN VIRGINIA BY
FIRST AND SECOND WORKING 1936

Working	Acreage Worked	No. of Ribes Destroyed		No. of man-days labor (8 hr. day)	Ribes per acre
		wild	culti.		
First	101,047	867,120	17,925	9757.5	8.5
Second	6,905	143,591	0	2575.5	20.8
Totals	107,952	1010,711	17,925	12333.0	9.36

TABLE 3 SHOWING RIBES ERADICATION IN VIRGINIA BY OWNER-
SHIP OF LAND - 1936

Ownership	Acreage Worked	No. of Ribes Destroyed			No. of man-days labor
		Wild	Culti.	Total	
National Forests	17,287	349,917	1,008	350,925	2,966
National Parks	3,369	110,246	6	110,252	2,341
Total Fed. Lands	20,656	460,163	1,014	461,177	5,307
Private and State	87,296	550,548	16,911	567,459	7,026
Totals	107,952	1,010,711	17,925	1028,636	12,333

[Faint, illegible handwritten text, likely bleed-through from the reverse side of the page. The text appears to be organized into several paragraphs or sections, but the specific words and sentences cannot be discerned.]

TABLE 3 A. ACREAGE WORKED ON NATIONAL LANDS IN VIRGINIA
BY WORKING - IN 1936, By E. C. W.

Unit	First Working	Second Working	Both Workings
National Forest	292	0	292
National Park	1,741	959	2,700
Totals	2,033	959	2,992

TABLE 4 SUMMARY OF RIBES ERADICATION IN VIRGINIA BY YEARS
1928 - 1936

Year	Acreage Worked	No. Ribes Destroyed	No. of Man-Days Labor	No. of Ribes per A.	No. of man-days per Acre.
1928- 1931	4,187	13,586	no data	3.24	-
1932	2,848	36,274	available "	12.77	-
1933	22,768	262,045	2911	11.50	0.12
1934	108,626	1,068,675	11884	9.84	0.11
1935	92,818	1,323,733	13666.5	14.26	0.14
1936	107,952	1,028,636	12333	9.53	0.11
Totals	339,199	3,732,949	40794.5	11.00	0.12*

*Average for Acreage worked beginning in 1933, for
which there is also data on Man-Days labor.

1. The first part of the paper is devoted to a general discussion of the problem.

2. In the second part, we consider the case of a single particle.

3. The third part is devoted to the case of a system of particles.

4. In the fourth part, we consider the case of a system of particles.

5. The fifth part is devoted to the case of a system of particles.

6. In the sixth part, we consider the case of a system of particles.

7. The seventh part is devoted to the case of a system of particles.

8. In the eighth part, we consider the case of a system of particles.

9. The ninth part is devoted to the case of a system of particles.

10. In the tenth part, we consider the case of a system of particles.

TABLE 5 SUMMARY OF RIBES ERADICATION RESULTS IN VIRGINIA
BY PROJECTS 1928-1936

Project	Acreage Worked	No. of Ribes Destroyed	No. of Man- Days Labor	Percent of Total Acrg. Wkd.
Regular	10,226	59,374	95.5	3.0
W. P. A	145,739	1,067,271	13,493.5	43.3
P. W. A	124,400	741,275	5,471.5	37.0
E. C. W	58,834	1,865,029	21,734.0	16.7
Totals	339,199	3,732,949	40,794.5	100.0

TABLE 6 SUMMARY OF ERADICATION RESULTS IN VIRGINIA
BY WORKING 1928-1936

Working	Acreage Worked	No. of Ribes Destroyed	No. of man-days labor	Ribes Per Acre
First	324,584	3,433,787	37137.0	10.5
Second	14,615	299,162	3657.5	20.4
Totals	339,199	3,732,949	40794.5	11.0

TABLE 7 SUMMARY OF RIBES ERADICATION RESULTS IN VIRGINIA
IN NATIONAL FORESTS 1928-1936

Year	Acreage Worked	No. of Ribes Destroyed	No. of man-days labor	Cost
1928-31	4,187	13,586	data not available	Est.\$ 384.66
1932	1,335	26,073	"	145.40
1933	9,301	7,332	"	1225.36
1934	7,148	26,027	973	1528.92
1935	6,912	9,359	403.5	1096.77
1936	17,287	350,925	2966.0	123.68
Totals	46,170	433,302	4342.5	\$4504.79

1. The first part of the report is a general introduction to the subject. It discusses the importance of the study and the objectives of the research. The second part of the report is a detailed description of the methods used in the study. This includes a description of the subjects, the procedures, and the data collection methods. The third part of the report is a presentation of the results of the study. This includes a description of the data and a discussion of the findings. The fourth part of the report is a conclusion and a discussion of the implications of the study. This includes a summary of the findings and a discussion of the limitations of the study and the need for further research.

2. The first part of the report is a general introduction to the subject. It discusses the importance of the study and the objectives of the research. The second part of the report is a detailed description of the methods used in the study. This includes a description of the subjects, the procedures, and the data collection methods. The third part of the report is a presentation of the results of the study. This includes a description of the data and a discussion of the findings. The fourth part of the report is a conclusion and a discussion of the implications of the study. This includes a summary of the findings and a discussion of the limitations of the study and the need for further research.

3. The first part of the report is a general introduction to the subject. It discusses the importance of the study and the objectives of the research. The second part of the report is a detailed description of the methods used in the study. This includes a description of the subjects, the procedures, and the data collection methods. The third part of the report is a presentation of the results of the study. This includes a description of the data and a discussion of the findings. The fourth part of the report is a conclusion and a discussion of the implications of the study. This includes a summary of the findings and a discussion of the limitations of the study and the need for further research.

TABLE 8 SUMMARY OF RIBES ERADICATION RESULTS IN VIRGINIA IN NATIONAL PARKS

1928 - 1936				
Year	Acreage Worked	No. of Ribes Destroyed	No. of Man-Days Labor	Cost
1933	3,958	243,240	not available	\$ 7,656.02
1934	6,949	605,224	6,534	9,305.08
1935	12,711	850,345	8,548.5	15,551.75
1936	3,369	110,252	2,341.0	4,564.42
Totals	26,987	1,809,061	17,423.5	\$37,077.27

TABLE 9 SUMMARY OF RIBES ERADICATION RESULTS IN VIRGINIA IN FEDERAL LANDS

1928 - 1936				
Year	Acreage Worked	No. of Ribes Destroyed	No. of Man-Days Labor	Cost
1928-31	4,187	13,586	not available	\$ 384.66
1932	1,335	26,073	"	145.40
1933	13,259	250,572	"	8,881.38
1934	14,097	631,251	7,584	10,834.00
1935	19,623	859,704	8,952	16,648.52
1936	20,656	461,177	5,307	4,688.10
Totals	73,157	2,242,363	21,843	\$41,582.06

Table 1. *Summary of the results of the analysis of variance for the effect of the concentration of the solution on the rate of the reaction.*

Table 1. Summary of the results of the analysis of variance for the effect of the concentration of the solution on the rate of the reaction.				
Concentration of the solution, %	Rate of the reaction, %/min	Standard deviation	Mean square	F-value
0.1	0.15	0.02	0.0004	0.01
0.2	0.30	0.03	0.0009	0.04
0.3	0.45	0.04	0.0016	0.09
0.4	0.60	0.05	0.0025	0.16
0.5	0.75	0.06	0.0036	0.25
0.6	0.90	0.07	0.0049	0.36
0.7	1.05	0.08	0.0064	0.49
0.8	1.20	0.09	0.0081	0.64
0.9	1.35	0.10	0.0100	0.81
1.0	1.50	0.11	0.0121	1.00

Table 2. *Summary of the results of the analysis of variance for the effect of the temperature on the rate of the reaction.*

Table 2. Summary of the results of the analysis of variance for the effect of the temperature on the rate of the reaction.				
Temperature, °C	Rate of the reaction, %/min	Standard deviation	Mean square	F-value
10	0.10	0.01	0.0001	0.01
20	0.20	0.02	0.0004	0.04
30	0.40	0.04	0.0016	0.16
40	0.80	0.08	0.0064	0.64
50	1.60	0.16	0.0256	2.56
60	3.20	0.32	0.1024	10.24
70	6.40	0.64	0.4096	40.96
80	12.80	1.28	1.6384	163.84
90	25.60	2.56	6.5536	655.36
100	51.20	5.12	26.2144	2621.44

TABLE 10 SUMMARY OF RIBES ERADICATION RESULTS IN VIRGINIA
ON STATE AND PRIVATE LANDS
1928 - 1936

Year	Acreage Worked	No. of Bushes Destroyed	No. of Man-Days Labor	Cost
1928-1931	0	0	0	\$ 0
1932	1,513	10,201	not available	78.11
1933	9,509	11,473	2,911	392.00
1934	94,529	437,424	4,300	19,926.93
1935	73,195	464,029	4,714.5	15,072.53
1936	87,296	567,459	7,026	16,336.29
Totals	266,042	1,490,586	18,951.5	\$51,806.06

TABLE 11 SUMMARY OF RIBES ERADICATION RESULTS IN VIRGINIA,
ACCORDING TO OWNERSHIP OF LAND 1928-1936

Ownership of Land	Acreage Worked	No. of Ribes Destroyed	No. of Man-Days Labor	Cost
National Lands	73,157	2,242,363	21,843*	\$41,582.06
State and Pri- vate Lands	266,042	1,490,586	18,951.5	51,806.06
Totals	339,199	3,732,949	40,794.5	\$93,388.12

* No data available for Man-Days Labor preceding 1934

TABLE 12 COST DATA FOR RIBES ERADICATION IN VIRGINIA,
BY PROJECTS IN 1936

Project	Initial Work	Rework	Total
W. P. A	15,663.49	520.80	16,184.29
Nat'l Park	682.21	3,882.21	4,564.42
ECW " Forest	123.68	0	123.68
	805.89		4,688.10
Regular	152.00		152.00
Total	16,621.38		21,024.39 *

* This is \$800 less than reported in general statistical summary due to wrong inclusion of supervision with Eradication on Regular Project in that statistical summary.

STATE OF NEW YORK
IN SENATE
January 1, 1903.

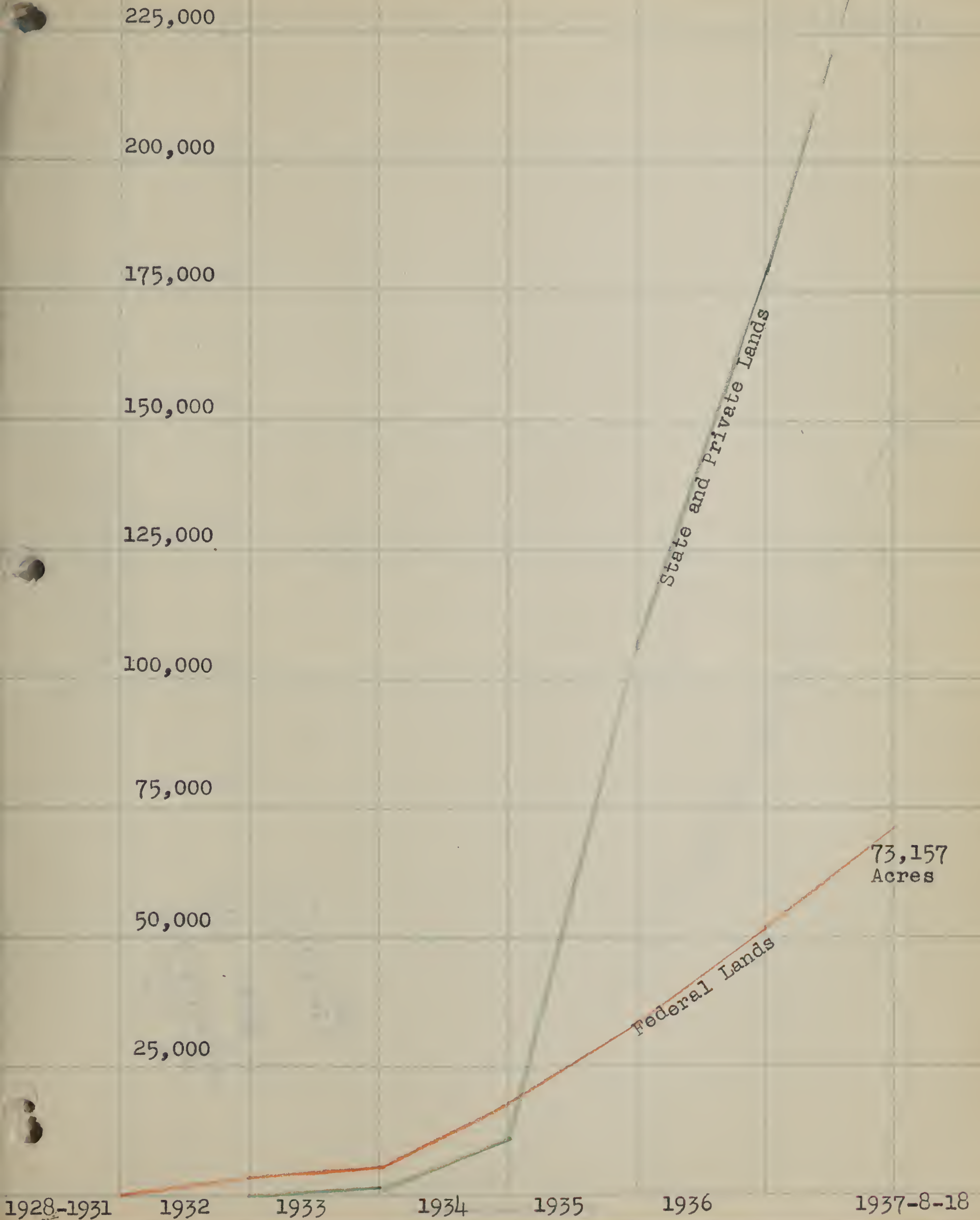
NAME	RESIDENCE	EDUCATION	EXPERIENCE	REMARKS
John A.
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NAME	RESIDENCE	EDUCATION	EXPERIENCE	REMARKS
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Graph Showing Cumulative Acreage Worked by Years
Including both Pine and Protective Zone on State
and Private Lands as Contrasted to Federal Lands
1928 to 1936 Inclusive



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U.S. DEPARTMENT
OF AGRICULTURE

Graph Showing Cumulative Ribes Destroyed by Years on State and Private Lands as Contrasted to those pulled on Federal Lands 1928 to 1936 Inclusive

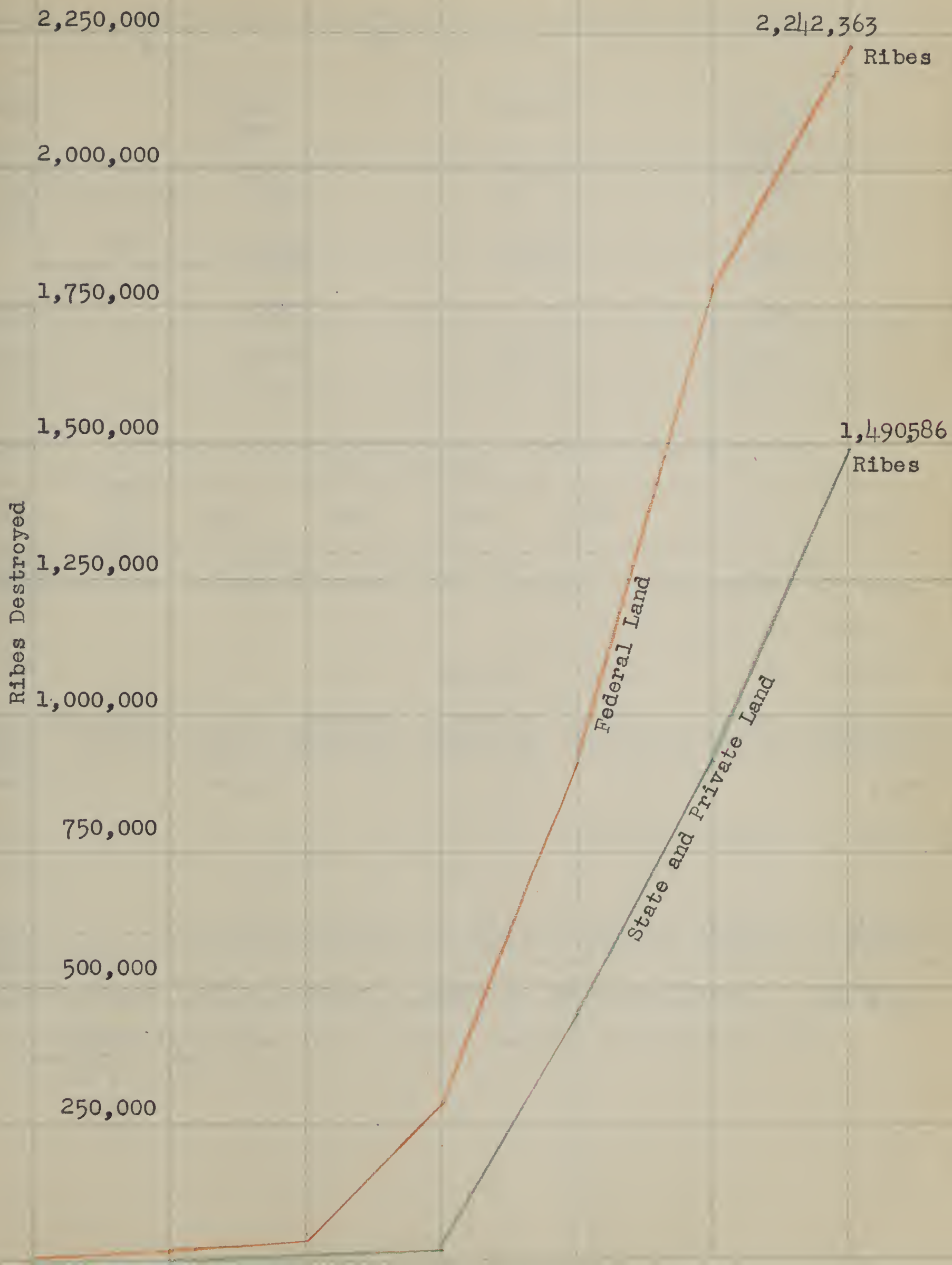


TABLE 13 COST PER ACRE FOR RIBES ERADICATION IN VIRGINIA, BY PROJECTS
1936

Project	Initial Work	Rework	Average For All Work
W. P. A	\$0.156	\$0.087	\$0.155
National Forest	0.423	0	.423
E.C.W			
" Park	0.392	4.05	1.690
Average for Both	0.396	4.05	1.230
Regular	0.253	0	.253
Average	\$0.164	\$0.638	\$0.202

TABLE 14 COST DATA FOR RIBES ERADICATION IN VIRGINIA BY WORKING AND YEAR
1928 to 1936

Project	1928 to 1931	1932	1933	1934	1935	1936	Total
<u>Initial</u>							
Regular	\$384.66	\$173.51	\$ 131.25	\$ 0	\$ 0	\$ 152.00	\$ 841.42
W. P. A	0	0	0	0	7466.11	15,663.49	23,129.60
P W A	0	0	0	19128.29	7337.02	0	26,465.31
E. C. W	0	0	8806.28	10856.06	16168.54	805.89	36,636.77
Total	\$384.66	\$173.51	\$8937.53	\$29984.35	\$30971.67	\$16,621.38	\$87,073.10
<u>Rework</u>							
Regular (1)		50.00	0	0	0	0	\$ 50.00
W. P. A	0				269.40	520.80	790.20
P. W. A	0	0	0	0	0	0	0.00
E. C. W	0	0	336.05	776.58	479.98	3882.21	5474.82
Total	0	\$ 50.00	\$ 336.05	\$ 776.58	\$ 749.38	\$ 4403.01	\$ 6315.02
<u>Grand Tot.</u>							
All Work	\$384.66	\$223.51	\$9373.58	\$30760.93	\$31721.05	\$21024.39	\$93388.12

(1) Cost lumped with initial cost - cost for reworking in Virginia was small from 1928 to 1931.

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TABLE 15 COST DATA FOR RIBES ERADICATION BY PROJECTS AND WORKING
1928 to 1936

Project	Initial Work	Rework	Total
Regular	\$ 841.42	\$ 50.00	\$ 891.42
W. P. A	23,129.60	790.20	23,919.80
P. W. A	26,465.31	0.00	26,465.31
E. C. W.	36,636.77	5,474.82	42,111.59
Total	\$87,073.10	\$6,315.02	\$93,388.12

TABLE 16 COST DATA FOR RIBES ERADICATION IN VIRGINIA, BY PROJECTS
AND YEARS 1928 - 1936

Project	1928 to 1931	1932	1933	1934	1935	1936	Total
Regular	\$384.66	\$231.51	\$ 131.25	\$	\$	\$ 152.00	\$ 891.42
W. P. A	0	0	0	0	27,735.51	16,184.29	23919.80
P. W. A	0	0	0	19,128.29	7,337.02	0.00	26465.31
E. C. W.	0	0	9,142.33	11,632.64	16,648.52	4,688.10	42111.59
Total	\$384.66	\$223.51	\$9,273.58	\$30,760.93	\$31,721.05	\$21024.39	\$93388.12

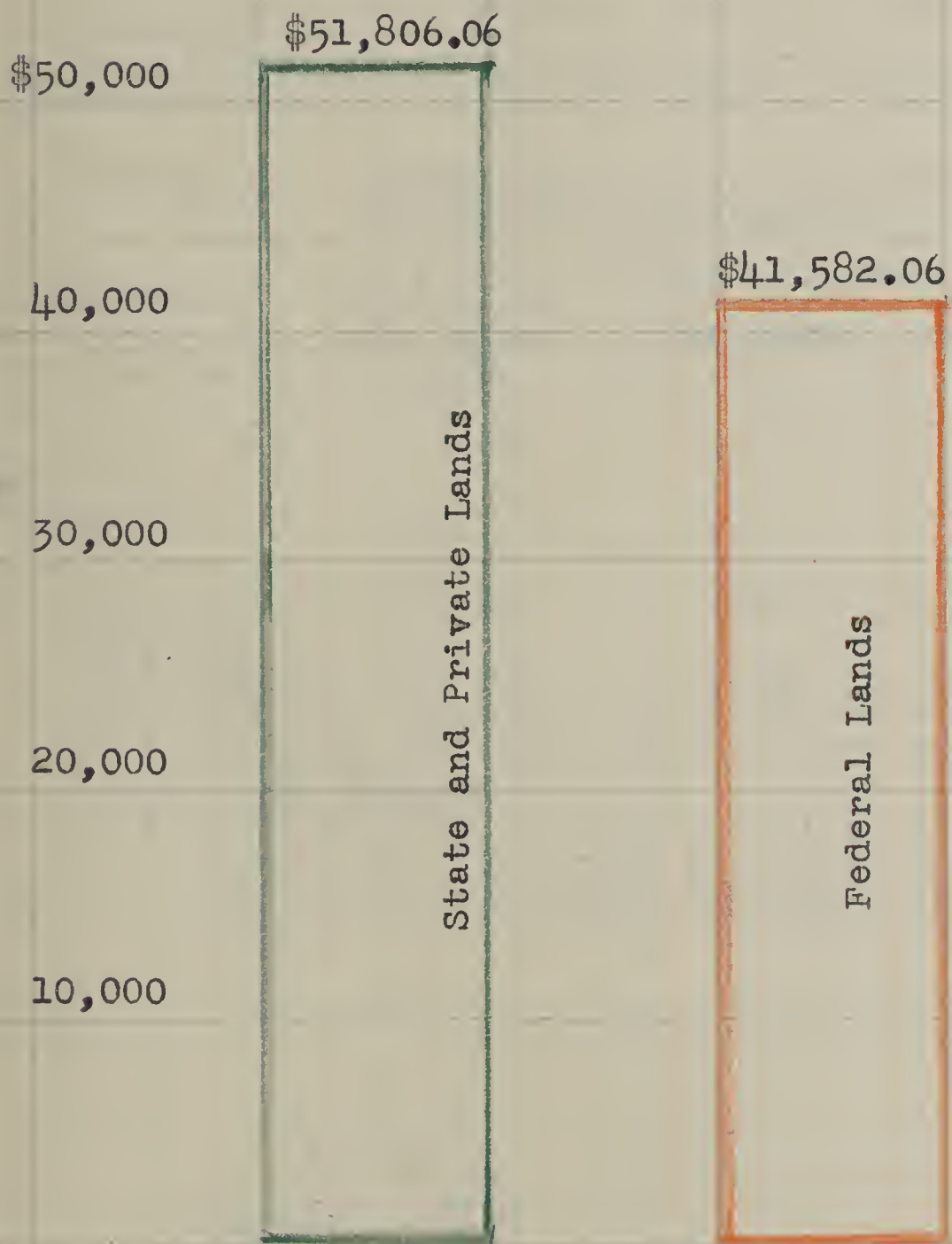
Table 1. Summary of the results of the analysis of variance for the effect of the treatment on the response of the subjects to the test.

Treatment	Response	Mean	Standard Error
Control	1.0	1.0	0.1
1.0 mg/kg	1.0	1.0	0.1
2.0 mg/kg	1.0	1.0	0.1
4.0 mg/kg	1.0	1.0	0.1
8.0 mg/kg	1.0	1.0	0.1
16.0 mg/kg	1.0	1.0	0.1
32.0 mg/kg	1.0	1.0	0.1
64.0 mg/kg	1.0	1.0	0.1
128.0 mg/kg	1.0	1.0	0.1
256.0 mg/kg	1.0	1.0	0.1
512.0 mg/kg	1.0	1.0	0.1
1024.0 mg/kg	1.0	1.0	0.1
2048.0 mg/kg	1.0	1.0	0.1
4096.0 mg/kg	1.0	1.0	0.1
8192.0 mg/kg	1.0	1.0	0.1
16384.0 mg/kg	1.0	1.0	0.1
32768.0 mg/kg	1.0	1.0	0.1
65536.0 mg/kg	1.0	1.0	0.1
131072.0 mg/kg	1.0	1.0	0.1
262144.0 mg/kg	1.0	1.0	0.1
524288.0 mg/kg	1.0	1.0	0.1
1048576.0 mg/kg	1.0	1.0	0.1
2097152.0 mg/kg	1.0	1.0	0.1
4194304.0 mg/kg	1.0	1.0	0.1
8388608.0 mg/kg	1.0	1.0	0.1
16777216.0 mg/kg	1.0	1.0	0.1
33554432.0 mg/kg	1.0	1.0	0.1
67108864.0 mg/kg	1.0	1.0	0.1
134217728.0 mg/kg	1.0	1.0	0.1
268435456.0 mg/kg	1.0	1.0	0.1
536870912.0 mg/kg	1.0	1.0	0.1
1073741824.0 mg/kg	1.0	1.0	0.1
2147483648.0 mg/kg	1.0	1.0	0.1
4294967296.0 mg/kg	1.0	1.0	0.1
8589934592.0 mg/kg	1.0	1.0	0.1
17179869184.0 mg/kg	1.0	1.0	0.1
34359738368.0 mg/kg	1.0	1.0	0.1
68719476736.0 mg/kg	1.0	1.0	0.1
137438953472.0 mg/kg	1.0	1.0	0.1
274877906944.0 mg/kg	1.0	1.0	0.1
549755813888.0 mg/kg	1.0	1.0	0.1
1099511627776.0 mg/kg	1.0	1.0	0.1
2199023255552.0 mg/kg	1.0	1.0	0.1
4398046511104.0 mg/kg	1.0	1.0	0.1
8796093022208.0 mg/kg	1.0	1.0	0.1
17592186044416.0 mg/kg	1.0	1.0	0.1
35184372088832.0 mg/kg	1.0	1.0	0.1
70368744177664.0 mg/kg	1.0	1.0	0.1
140737488355328.0 mg/kg	1.0	1.0	0.1
281474976710656.0 mg/kg	1.0	1.0	0.1
562949953421312.0 mg/kg	1.0	1.0	0.1
1125899906842624.0 mg/kg	1.0	1.0	0.1
2251799813685248.0 mg/kg	1.0	1.0	0.1
4503599627370496.0 mg/kg	1.0	1.0	0.1
9007199254740992.0 mg/kg	1.0	1.0	0.1
18014398509481984.0 mg/kg	1.0	1.0	0.1
36028797018963968.0 mg/kg	1.0	1.0	0.1
72057594037927936.0 mg/kg	1.0	1.0	0.1
144115188075855872.0 mg/kg	1.0	1.0	0.1
288230376151711744.0 mg/kg	1.0	1.0	0.1
576460752303423488.0 mg/kg	1.0	1.0	0.1
1152921504606846976.0 mg/kg	1.0	1.0	0.1
2305843009213693952.0 mg/kg	1.0	1.0	0.1
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295147905179352825856.0 mg/kg	1.0	1.0	0.1
590295810358705651712.0 mg/kg	1.0	1.0	0.1
1180591620717411303424.0 mg/kg	1.0	1.0	0.1
2361183241434822606848.0 mg/kg	1.0	1.0	0.1
4722366482869645213696.0 mg/kg	1.0	1.0	0.1
9444732965739290427392.0 mg/kg	1.0	1.0	0.1
18889465931478580854784.0 mg/kg	1.0	1.0	0.1
37778931862957161709568.0 mg/kg	1.0	1.0	0.1
75557863725914323419136.0 mg/kg	1.0	1.0	0.1
151115727451828646838272.0 mg/kg	1.0	1.0	0.1
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604462909807314587353088.0 mg/kg	1.0	1.0	0.1
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79228162514264337593543950336.0 mg/kg	1.0	1.0	0.1
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5070602400912917605986812821504.0 mg/kg	1.0	1.0	0.1
10141204801825835211973625643008.0 mg/kg	1.0	1.0	0.1
20282409603651670423947251286016.0 mg/kg	1.0	1.0	0.1
40564819207303340847894502572032.0 mg/kg	1.0	1.0	0.1
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696898287454081973172991196020261297061888.0 mg/kg	1.0	1.0	0.1
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2787593149816327892691964784081045188247552.0 mg/kg	1.0	1.0	0.1
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1496577676626844588240573268701473812127674924007424.0 mg/kg	1.0	1.0	0.1
2993155353253689176481146537402947624255349848014848.0 mg/kg	1.0	1.0	0.1
5986310706507378352962293074805895248510699696029696.0 mg/kg	1.0	1.0	0.1
11972621413014756705924586149611790497021399392059392.0 mg/kg	1.0	1.0	0.1
23945242826029513411849172299223580994042798784118784.0 mg/kg	1.0	1.0	0.1
47890485652059026823698344598447161988085597568237568.0 mg/kg	1.0	1.0	0.1
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191561942608236107294793378393788647952342390272950272.0 mg/kg	1.0	1.0	0.1
383123885216472214589586756787577295904684780545900544.0 mg/kg	1.0	1.0	0.1
766247770432944429179173513575154591809369561091801088.0 mg/kg	1.0	1.0	0.1
1532495540865888858358347027150309183618739122183602176.0 mg/kg	1.0	1.0	0.1
3064991081731777716716694054300618367237478244367204352.0 mg/kg	1.0	1.0	0.1
612998216346355543343338810860			

- 84 A -
VIRGINIA

Graph Showing Relative Amounts Spent for Ribes Eradication
on State and Private Lands and on Federal Lands in Period
1928 to 1936

(Total Expenditures \$93,388.12)



U.S. DEPARTMENT
OF AGRICULTURE
PLANT QUARANTINE
AUG 28 11 53 PM '37

TABLE 17 COST PER ACRE FOR RIBES ERADICATION IN VIRGINIA
BY PROJECTS 1928 to 1936

Project	1928 to 1931	1932	1933	1934	1935	1936	Average All years
Regular	\$0.092	\$0.078	\$0.051	\$ -	\$ -	\$0.253	\$0.087
W. P. A	-	-	-	-	0.187	0.155	0.167
P. W. A.	-	-	-	0.206	0.230	-	0.213
E. C. W	-	-	0.453	0.725	0.848	1.23	0.718
Average All Projects	\$0.092	\$0.078	\$0.407	\$0.294	\$0.341	\$0.202	\$0.238

TABLE 18 RIBES PER ACRE AND MAN-DAYS PER ACRE FOR RIBES
ERADICATION IN VIRGINIA

Project	1936 Wild Ribes Per Acre	1936 Man Days Per Acre	1928 to 1936 All Ribes Per Acre	1928 to 1936 Man-Days Per Acre
Regular	5.0	.100	5.8	.100 (1)
W. P. A	8.58	.097	7.3	.093
P. W. A	0.	.0	5.9	.044
E. C. W	35.4	.738	31.7	.708 (2)
Average Per Acre	9.36	.114	11.0	.132 (3)

(1) Data only for 1936 since Man-Days not available prior to 1934

(2) Based on Data from 1934 to 1936 inclusive; 19696 Man-Days and 37,819 acres.

(3) Based on Data from 1934 to 1936 inclusive; 40794.5 Man-Days and 309396. If total acreage from 1928 to 1936, 339,396 had been used and 40794.5 Man-Days. the Man-Days per Acre would be 0.120.

Table 1. Summary of the data collected during the field study.

Location	Date	Time	Temperature (°C)	Humidity (%)	Wind Speed (m/s)	Wind Direction	Cloud Cover (%)	Visibility (km)	Soil Moisture (%)	Plant Growth (cm)
Field 1	2023-01-15	08:00	15.2	65	2.5	SE	10	10	12	5.0
Field 1	2023-01-15	12:00	18.5	55	3.0	SE	15	10	15	5.5
Field 1	2023-01-15	16:00	16.8	70	2.0	SE	10	10	10	5.0
Field 2	2023-01-16	08:00	14.5	60	2.0	SE	10	10	10	5.0
Field 2	2023-01-16	12:00	17.0	50	3.5	SE	15	10	15	5.5
Field 2	2023-01-16	16:00	15.5	65	2.5	SE	10	10	10	5.0
Field 3	2023-01-17	08:00	13.0	55	1.5	SE	10	10	10	5.0
Field 3	2023-01-17	12:00	16.0	45	2.5	SE	15	10	15	5.5
Field 3	2023-01-17	16:00	14.5	50	2.0	SE	10	10	10	5.0

Table 2. Summary of the data collected during the laboratory study.

Location	Date	Time	Temperature (°C)	Humidity (%)	Wind Speed (m/s)	Wind Direction	Cloud Cover (%)	Visibility (km)	Soil Moisture (%)	Plant Growth (cm)
Lab 1	2023-01-18	08:00	20.0	40	0.5	SE	10	10	10	5.0
Lab 1	2023-01-18	12:00	22.5	30	0.5	SE	10	10	10	5.5
Lab 1	2023-01-18	16:00	21.0	35	0.5	SE	10	10	10	5.0
Lab 2	2023-01-19	08:00	19.5	35	0.5	SE	10	10	10	5.0
Lab 2	2023-01-19	12:00	22.0	25	0.5	SE	10	10	10	5.5
Lab 2	2023-01-19	16:00	20.5	30	0.5	SE	10	10	10	5.0
Lab 3	2023-01-20	08:00	18.0	30	0.5	SE	10	10	10	5.0
Lab 3	2023-01-20	12:00	21.0	20	0.5	SE	10	10	10	5.5
Lab 3	2023-01-20	16:00	19.5	25	0.5	SE	10	10	10	5.0

Table 3. Summary of the data collected during the simulation study.

Table 4. Summary of the data collected during the analysis study.

Table 5. Summary of the data collected during the validation study.

TABLE 19 ERADICATION OF WILD AND CULTIVATED RIBES
IN VIRGINIA, BY YEARS

1928 to 1936

Year	Wild Bushes	Cultivated Bushes	Total Bushes
1928 to 1931	13,584	2	13,586
1932	36,274	0	36,274
1933	262,045	0	262,045
1934	1,045,750	13,925	1,068,657
1935	1,314,770	8,963	1,323,733
1936	1,010,711	17,925	1,028,636
Totals	3,692,134	40,815	3,732,949

TABLE 8-A
ACREAGE OF CONTROL AREA
1918-'36

December 31, 1936

VIRGINIA

County	Areas Control	Acreage Initially Cleared of Ribes	Acreage Pre-erad- ication Not Cleared	Acreage not pre- eradicated or eradi- cated
Albemarle	4,911	3,911	-	1,000
Amherst	15,000	4,577	-	10,423
Alleghany	4,845	4,845	-	-
Augusta	37,922	26,922	900	10,100
Bath	20,500	7,271	-	13,229
Bland	11,766	11,766	-	-
Botetourt	5,000	3,621	-	1,379
Carroll	72,137	72,137	-	-
Clarke	468	468	-	-
Craig	1,950	1,950	-	-
Fairfax	80	80	-	-
Fauquier	1,654	654	-	1,000
Floyd	20,000	9,631	-	10,369
Franklin	30,000	11,292	-	18,708
Giles	9,056	9,056	-	-
Grayson	30,100	11,637	1,253	17,210
Greene	4,033	3,033	1,000	-
Henry	7,532	7,532	-	-
Highland	19,383	17,253	130	2,000
Loudoun	358	358	-	-
Madison	10,901	10,901	-	-
Montgomery	10,000	7,100	-	2,900
Nelson	980	980	-	-
Page	35,020	35,020	-	-
Pulaski	10,000	6,560	-	3,440
Rappahannock	25,248	25,248	-	-
Roanoke	10,000	8,945	-	1,055
Rockbridge	10,000	8,388	-	1,612
Rockingham	24,453	24,453	-	-
Scott	2,056	2,056	-	-
Shenandoah	20,000	12,021	-	7,979
Smyth	40,000	26,707	-	13,293
Tazewell	50	50	-	-
Warren	4,930	4,930	-	-
Washington	69,443	69,443	-	-
Wise	165	165	-	-
Wythe	35,000	5,347	650	29,003
GRAND TOTALS	604,941	456,308	3,933	144,700

NOTE: Compiled from Pine Area Record Sheets on hand 1/30/37 and estimated for unworked regions. Where counties were worked under a ten per cent standard, an estimate of the 5% pine acreage has been made.

WEST VIRGINIA

TABLE 1 RIBES ERADICATION IN WEST VIRGINIA, BY PROJECTS, IN 1936

Project	Acreage Worked	No. of Ribes Destroyed			No. of man-days labor	Avrg. No. of Ribes per A.	Average No. of man-days per A.
		Wild	Culti.	Total			
W. P. A	71388	298,661	394	299,055	4,234.1	4.0	0.0592
E. C. W	15540	77,378	0	77,378	1,593.4	5.0	0.1031
Totals	86928	376,039	394	376,433	5,827.5	4.3	0.0670

TABLE 2 RIBES ERADICATION IN WEST VIRGINIA, BY WORKING, IN 1936

Working	Acreage Worked	No. of Ribes Destroyed			No. of man-days labor	Average no. of Ribes per A.	Average no. of Man-Days per A.
		Wild	Culti.	Total			
First	75,813	314,106	394	314,500	4,838.1	4.2	0.0638
Second	11,115	61,933	0	61,933	989.4	5.6	0.0890
Totals	86,928	376,039	394	376,433	5,827.5	4.3	0.0670

TABLE 3 RIBES ERADICATION IN WEST VIRGINIA, ACCORDING TO OWNERSHIP, IN 1936

Ownership	Acreage Worked	Number of Ribes Destroyed			No. of man-days labor	Average no. of Ribes per A.	Avrg. no. of m-days Per A
		Wild	Culti.	Total			
Nat'l Forest	17,933	124,010	0	124,010	1845.3	6.91	0.103
State Land	2,619	23,183	0	23,183	142.0	8.85	0.054
Private Land	66,376	228,846	394	229,240	3840.2	3.45	0.058
Totals	86,928	376,039	394	376,433	5827.5	4.3	0.067

TABLE 4 ACREAGE WORKED ON NATIONAL LANDS IN WEST VIRGINIA, BY WORKING IN 1936

Working	E. C. W.		W. P. A.		Both Projects	
	Acres Pine protected	Total Acreage Worked	Acres pine protected	Total acreage worked	Acres pine protected	Total Acreage Worked
First	6,301	12,396	2,296	5,090	8,597	17,486
Second	112	447	0	0	112	447
Totals	6,413	12,843	2,296	5,090	8,709	17,933

WEST VIRGINIA

TABLE 5 SUMMARY OF RIBES ERADICATION IN WEST VIRGINIA, BY YEARS
1932 to 1936

Year	Acreage Worked	Number of Ribes Destroyed			No. of man-days labor	Avrg. no. of Ribes per A.	Average no. of man-days per Acre
		Wild	Culti.	Total			
1932	268	2	0	2	no record	.0075	-
1933	4,256	60,748	0	60,748	635.	14.25	0.149
1934	33,184	131,679	3,386	135,065	1908.	4.07	0.057
1935	37,681	402,505	2,027	404,532	3061.6	10.68	0.081
1936	86,928	376,039	394	376,433	5827.5	4.3	0.067
Totals	162,317	970,973	5,807	976,780	11432.1	6.01	.074

TABLE 6 SUMMARY OF RIBES ERADICATION IN WEST VIRGINIA, BY PROJECTS
1932 to 1936

Project	Acreage Worked	Number of Ribes Destroyed			No. of man-days labor	Average	
		Wild	Culti.	Total		Ribes per Acre	No. of man-days per A.
Regular	268	2	0	2	-	.0075	-
W. P. A	86, 924	418,013	1,104	419,117	5456.9	4.83	0.063
P. W. A	46,045	341,031	4,703	345,734	2409.7	7.51	0.052
E. C. W	29,080	211,927	0	211,927	3565.5	7.29	0.122
Totals	162,317	970,973	5,807	976,780	11432.1	6.01	0.074

TABLE 7 SUMMARY OF RIBES ERADICATION IN WEST VIRGINIA, BY WORKING,
1932 to 1936

Working	Acreage Worked	Number of Ribes Destroyed			Number of Man- days Labor	Average	
		Wild	Cultivated	Total		No. of Ribes Per A.	No. of Man-Days Per A.
First	148,720	896,453	5,807	902,260	10081.7	6.06	0.067
Second	13,597	74,520	0	74,520	1350.4	5.48	0.099
Totals	162,317	970,973	5,807	976,780	11432.1	6.01	0.074

WEST VIRGINIA

TABLE 8 SUMMARY OF RIBES ERADICATION IN WEST VIRGINIA,
IN NATIONAL FORESTS, BY YEARS, 1933 to 1936

Year	Acreage Worked	No. of Ribes Destroyed	No. of man-days labor	Average		Cost
				No. Ribes Per A.	No. of man-days per Acre	
1933	606	36,932	386.0	61.0	0.637	\$496.00
1934	2,904	13,612	553.0	6.8	0.276	868.50
1935	6,931	52,258	655.1	7.5	0.094	1360.52
1936	17,933	124,010	1845.3	6.9	0.103	4171.05
Total	27,474	226,812	3439.4	8.3	0.125	\$6896.07

TABLE 9 SUMMARY OF RIBES ERADICATION IN WEST VIRGINIA ON
STATE AND PRIVATE LANDS BY YEARS
1932 to 1936

Year	Acreage Worked	No. of Ribes Destroyed	No. of man-days Labor	Average		Cost
				No. Ribes Per A.	No. of Man-Days per A.	
1932	268	2	no record	.0075	-	\$ 24.35
1933	3,650	23,816	249.0	6.5	0.068	836.75
1934	31,180	121,453	1355.0	3.9	0.043	6,707.11
1935	30,750	352,274	2406.5	11.45	0.078	9,169.22
1936	68,995	252,423	3982.2	3.65	0.058	12,885.95
Totals	134,843	749,968	7992.7	5.56	0.059	\$29,623.38

TABLE 10 SUMMARY OF RIBES ERADICATION IN WEST VIRGINIA ON
FEDERAL AND NON-FEDERAL LANDS 1932-1936

Ownership	Acreage Worked	No. of Ribes Destroyed	No. of Man-Days Labor	Cost
National Forest	27,474	226,812	3439.4	\$ 6,896.07
State and Private	134,843	749,968	7992.7	29,623.38
Totals	162,317	976,780	10432.1	\$36,519.45

TABLE I

TABLE I					
Summary of results for the first series of experiments					
Run	Time	Temperature	Pressure	Volume	Weight
1	10.0	25.0	1.0	1.0	1.0
2	10.0	25.0	1.0	1.0	1.0
3	10.0	25.0	1.0	1.0	1.0
4	10.0	25.0	1.0	1.0	1.0
5	10.0	25.0	1.0	1.0	1.0
6	10.0	25.0	1.0	1.0	1.0
7	10.0	25.0	1.0	1.0	1.0
8	10.0	25.0	1.0	1.0	1.0
9	10.0	25.0	1.0	1.0	1.0
10	10.0	25.0	1.0	1.0	1.0

TABLE II					
Summary of results for the second series of experiments					
Run	Time	Temperature	Pressure	Volume	Weight
1	10.0	25.0	1.0	1.0	1.0
2	10.0	25.0	1.0	1.0	1.0
3	10.0	25.0	1.0	1.0	1.0
4	10.0	25.0	1.0	1.0	1.0
5	10.0	25.0	1.0	1.0	1.0
6	10.0	25.0	1.0	1.0	1.0
7	10.0	25.0	1.0	1.0	1.0
8	10.0	25.0	1.0	1.0	1.0
9	10.0	25.0	1.0	1.0	1.0
10	10.0	25.0	1.0	1.0	1.0

TABLE III					
Summary of results for the third series of experiments					
Run	Time	Temperature	Pressure	Volume	Weight
1	10.0	25.0	1.0	1.0	1.0
2	10.0	25.0	1.0	1.0	1.0
3	10.0	25.0	1.0	1.0	1.0
4	10.0	25.0	1.0	1.0	1.0
5	10.0	25.0	1.0	1.0	1.0
6	10.0	25.0	1.0	1.0	1.0
7	10.0	25.0	1.0	1.0	1.0
8	10.0	25.0	1.0	1.0	1.0
9	10.0	25.0	1.0	1.0	1.0
10	10.0	25.0	1.0	1.0	1.0

WEST VIRGINIA

TABLE 11 COST DATA FOR RIBES ERADICATION IN WEST VIRGINIA,
BY PROJECTS IN 1936

Project	Initial Work	Rework	Total
W. P. A	\$10,871.53	\$ 2,967.67	\$13,839.20
E. C. W	3,129.58	88.22	3,217.80
Totals	\$14,001.11	\$ 3,055.89	\$17,057.00

TABLE 12 COST PER ACRE AND ACREAGE FOR RIBES ERADICATION IN
WEST VIRGINIA BY PROJECTS AND WORKING IN 1936

Project	Initial Work		Rework		Total	
	Acres	Cost per A.	Acres	Cost Per A.	Acres	Cost per A.
W. P. A	60720	\$0.179	10668	\$0.278	71388	\$0.195
E. C. W	15093	0.207	447	0.198	15540	0.207
Totals	75813	\$0.187	11115	\$0.275	86928	\$0.196

TABLE 13 COST DATA FOR RIBES ERADICATION IN WEST VIRGINIA
BY PROJECTS 1932 - 1936

Year	Regular	W.P.A.	P. W. A	E.C.W.	Total
1932	\$24.35	-			\$ 24.35
1933	-	-		\$ 1,332.75	1,332.75
1934	-	-	\$ 6,548.60	1,027.01	7,575.61
1935	-	4,220.22	4,948.70	1,360.82	10529.74
1936	-	13,839.20	-	3,217.80	17057.00
Totals	\$24.35	\$18,059.42	\$11,497.30	\$6,938.38	\$36519.45

Table 1

Table 1 shows the results of the experiment. The data is presented in the following table.

Time (min)	Temperature (°C)	Pressure (atm)	Volume (L)
0	25.0	1.0	1.0
10	25.5	1.0	1.0
20	26.0	1.0	1.0
30	26.5	1.0	1.0
40	27.0	1.0	1.0
50	27.5	1.0	1.0
60	28.0	1.0	1.0
70	28.5	1.0	1.0
80	29.0	1.0	1.0
90	29.5	1.0	1.0
100	30.0	1.0	1.0

Time (min)	Temperature (°C)	Pressure (atm)	Volume (L)
0	30.0	1.0	1.0
10	30.5	1.0	1.0
20	31.0	1.0	1.0
30	31.5	1.0	1.0
40	32.0	1.0	1.0
50	32.5	1.0	1.0
60	33.0	1.0	1.0
70	33.5	1.0	1.0
80	34.0	1.0	1.0
90	34.5	1.0	1.0
100	35.0	1.0	1.0

WEST VIRGINIA

TABLE 14 COST PER ACRE FOR RIBES ERADICATION IN WEST VIRGINIA,
BY PROJECTS 1932 to 1936

Project	1932	1933	1934	1935	1936	Average Cost
Regular	\$0.098	\$ -	\$ -	\$ -	\$ -	\$0.098
W. P. A	-	-	-	0.347	0.195	0.218
P. W. A	0	-	0.212	.322	-	0.249
E. C. W	-	.313	0.436	.196	0.207	0.238
Total	\$0.098	\$0.313	\$0.228	\$0.279	\$0.196	\$0.225

TABLE 15 COST DATA FOR RIBES ERADICATION IN WEST VIRGINIA 1932 to 1936
BY WORKING AND YEAR

Project	1932	1933	1934	1935	1936	Total
INITIAL WORK						
Regular	\$24.35		\$	\$	\$	\$ 24.35
W. P. A	0	-	-	4220.22	10,871.53	15,091.75
P. W. A	0		6,235.45	4948.70	-	11,184.15
E. C. W	0	\$1332.75	854.41	1360.82	3,129.58	6,677.56
TOTAL	\$24.35	\$1332.75	\$7,089.86	\$10,529.74	\$14,001.11	\$32,977.81
INITIAL						
REWORK						
Regular	-	-	-	-	-	-
W. P.A	-	-	\$ 310.15	\$ -	\$ 2,967.67	\$ 3,277.82
P. W.A	-	-	-	-	-	-
E. W. W	-	-	\$ 175.60	-	\$ 88.22	\$ 263.82
Total	0	0	\$ 485.75	\$ 0	\$ 3,055.89	\$ 3,541.64
GRAND						
TOTAL	\$24.35	\$1332.75	\$7,575.61	\$10,529.74	\$17,057.00	\$36,519.45

TABLE 1

TABLE 1. Summary of the results of the analysis of variance for the different factors.

Factor	SS	df	MS	F	P
Block	1.2	1	1.2	1.2	0.3
Treatment	10.8	2	5.4	5.4	0.01
Error	18.0	18	1.0		
Total	30.0	21			

TABLE 2. Summary of the results of the analysis of variance for the different factors.

Factor	SS	df	MS	F	P
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TABLE 3. Summary of the results of the analysis of variance for the different factors.

Factor	SS	df	MS	F	P
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TABLE 4. Summary of the results of the analysis of variance for the different factors.

Factor	SS	df	MS	F	P
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TABLE 5. Summary of the results of the analysis of variance for the different factors.

Factor	SS	df	MS	F	P
--------	----	----	----	---	---

TABLE 6. Summary of the results of the analysis of variance for the different factors.

Factor	SS	df	MS	F	P
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TABLE 7. Summary of the results of the analysis of variance for the different factors.

Factor	SS	df	MS	F	P
--------	----	----	----	---	---

TABLE 8. Summary of the results of the analysis of variance for the different factors.

Factor	SS	df	MS	F	P
--------	----	----	----	---	---

TABLE 9. Summary of the results of the analysis of variance for the different factors.

DORMANT ERADICATION IN WEST VIRGINIA IN FALL 1935
CONTRASTED WITH REWORKING IN SPRING 1936

Dr. Ashcroft of West Virginia has submitted two tables summarizing the results of dormant eradication in the fall of 1935, and reeradication the following summer 1936. The dormant eradication was carried out on 22 plots, the total acreage amounting to 7,139 acres in dormant eradication of which 2,473 acres was crew work and 4,666 acres was scout work. The area workedⁱⁿ the summer was exactly the same in each plot with the exception of Pine Plot # 11 Circleville, which in 1936 included 50 acres more of crew work than it did in 1935. Of the 21 plots which were the same size in both seasons, the number of bushes pulled was less in the dormant season than in the growing season in 14 cases, while in 7, more were pulled in the dormant season than in the growing season following.

In Cass Quadrangle, in 10 plots, as shown on the second table, 39,019 bushes were removed in the dormant season and only 36,169 in the second eradication. In Circleville and, Ft. Seybert plots (excluding Plot 11, Circleville, for reasons mentioned above) 21,229 bushes were pulled in dormant season and 20,565 bushes were pulled in growing season. Putting all Plots except # 11 Circleville together, there were 116,982 bushes pulled in the two workings of which 60,248 or 51.5% were pulled during the dormant season.

Concerning cost, excluding Plot 11, Circleville, dormant season work cost \$1,274.07, which gave an average of 17.9¢ per acre, while summer work cost \$1,992.70, an average of 27.9¢ per A.

8. *On the question of the*

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Since the present work in West Virginia, is, however, largely a relief measure the results of dormant season eradication would seem to justify work until the ground froze.

THE UNIVERSITY OF CHICAGO
DEPARTMENT OF THE HISTORY OF ARTS
AND ARCHITECTURE
OFFICE OF THE CURATOR
OF THE MUSEUM OF ARTS
AND ARCHITECTURE
CHICAGO, ILLINOIS

SUMMARY OF REERADICATION AND CHECKS OF DORMANT SEASON

ERADICATION IN WEST VIRGINIA

Quad.	Plot No.	Date init.	Date Re-erad.	Acres Worked		Spe-	Ribes Eradicated				C O S T S						CHECKING DATA						No sprout found on check																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
				Init. erad.	Re-erad.		First erad.	Re-erad.	Total	Crew &	First erad.	Re-erad.	First erad.	acres	bushes	bush efficiency																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
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Control zone of pine lot #11 Circleville Quadrangle extended in 1936 to include 50 acres of crew work not worked in 1935.

*An area of 100 acres was checked to determine what percentage of root systems left in the ground in the fall eradication subsequently produced sprouts. In this area 4000 bushes were originally pulled. 119 sprouts were pulled in the spring eradication or about 3% of the root systems subsequently produced sprouts

Recd Sept 11, 1936

J M Coshcroft

W Va

TABLE 11

REERADICATION

RESULTS OF A REERADIATION PROGRAM CARRIED OUT TO DETERMINE THE EFFICIENCY OF INITIAL ERADICATION IN THE LATE FALL

PINE LOT NO. (CASS QUADRANGLE)	36	39	40	43	55	58	59	61	62	67	TOTALS
ERADICATION DATES	1935 10/17-11/5 1936 5/11-6/10	11/6-11/8 6/24-6/25	9/23-9/25 6/25-6/26	10/23-11/5 6/24	10/25-11/5 6/26	9/26-1/4 6/11-6/18	9/6-10/12 5/26-6/11	9/23-10/11 6/11-6/19	10/9-10/25 6/19-6/24	10/16-11/6 6/19-6/24	
ACRES PINE PROTECTED	1935 101 1936 Same Totals 101	12 Same 12	185 Same 185	104 Same 104	281 Same 281	177 Same 177	126 Same 126	20 Same 20	151 Same 151	158 Same 158	1315 Same 1315
ACRES CONTROL AREA WORKED	1935 441 1936 Same Totals 441	137 Same 137	534 Same 534	305 Same 305	664 Same 664	263 Same 263	481 Same 481	72 Same 72	361 Same 361	592 Same 592	3850 Same 3850
RIBES PULLED	1935 8345 1936 12700 TOTALS 21045	112 314 426	709 571 1280	349 1013 1362	474 204 678	2260 4142 6402	15624 7376 23000	7018 4636 11654	1364 2246 3610	2764 2967 5731	39019 36169 75188
AVE. NO RIBES PER ACRE	1935 18.9 1936 28.7 TOTALS 47.6	0.8 2.2 3.0	1.3 1.0 2.3	1.1 3.3 4.4	0.7 0.3 1.0	2.5 15.7 24.2	32.4 15.3 47.7	97.4 64.3 161.7	3.7 6.2 9.9	4.8 5.0 9.6	10.1 9.3 19.4
MAN DAYS LABOR (8 HR. DAY)	1935 61.6 1936 83 TOTALS 144.6	7.62 11 18.62	10.43 12.75 23.18	29.25 2.62 31.87	9.31 4.25 13.56	19.61 31 50.61	63.99 58.5 122.49	25.06 29.62 54.68	26.18 19.62 45.80	19.74 28.5 48.24	272.79 280.86 553.65
AVERAGE ACRES ERAD. * PER MAN-DAY	1935 7.1 1936 5.3 TOTALS 6.1	17.19 12.45 14.7	51.1 41.8 45.1	10.4 116.0 19.1	71.3 156.0 97.9	13.4 8.4 10.3	7.5 8.2 7.8	2.87 2.43 2.6	13.7 18.3 15.8	29.9 20.7 24.5	14.1 13.7 13.9
COST OF ERADICATION	1935 \$150.25 1936 214.24 TOTALS 364.49	30.50 27.71 58.21	36.60 33.82 70.42	68.10 6.75 74.85	21.76 11.29 33.05	51.80 82.36 134.16	153.05 155.67 308.72	61.50 77.06 138.56	60.25 53.22 113.47	52.79 74.25 127.04	686.60 736.37 1422.97
AVE. COST PER ACFT PINE	1935 1.48 1936 2.12 TOTALS 3.60	2.54 2.30 4.84	.19 .18 .37	.65 .06 .71	.07 .04 .11	.29 .46 .75	1.21 1.23 2.44	3.07 3.85 6.92	.39 .35 .74	.33 .47 .80	.52 .56 1.08
AVE. COST PER A. CONTROL AREA	1935 .34 1936 .48 TOTALS .82	.22 .20 .42	.06 .06 .12	.22 .02 .24	.03 .01 .04	.19 .31 .50	.31 .32 .63	.85 1.07 1.92	.16 .15 .31	.08 .12 .20	.17 .19 .36
SPECIES ERADICATED	rot.cyn	cyn.	cyn.	cyn.rot.	cyn.	cyn.rot	rot.cyn.	rot., cyn	cyn.rot.	cyn. rot.	
KIND OF COVER	Dense	Dense	Dense	Dense	Open	Dense	Dense	Dense	Dense	Open	
ACREAGE CREW WORK CHECKED	40/20	Scout work	10/20			21/20	5/20	14/20	20/20	25/20	6 15/20
MAN HOURS CHECKING	40	10	15			36	12	9	12	35	169
RIBES PULLED ON CHECKS	26	0	1			6	3	7	2	5	50
AVE. NO. RIBES PER ACRE CHECKED	13	0	2			5.6	12	10	2	4	7.4
TOTAL LIVESTEMAGE CHECKS	21' - 10"	0	10"			5' - 5"	5' - 9"	10' - 5"	1' - 1 1/2"	6' - 6"	51' - 10 1/2"
AVE. FT. LIVESTEM PER ACRE CHECKED	10' - 11"	0	1' - 8"			5' - 1"	23'	15'	1' - 1 1/2"	5' - 2"	7' - 10 1/2"
BUSH EFFICIENCY - CREW WORK	91%	100%	97%			96%	94%	90%	93%	97%	94%
DATES CHECKED	6/10/36	6/26/36	6/26/36			6/18/36	6/18/36	6/16/17/36	6/22/24/36	6/22-26/36	
GENERAL REMARKS	Checks performed on various of the above ten Pine Lots revealed that, of the total number of Ribes pulled on reeradication, 2.3% were crown and root sprouts.										

* The average acres eradicated per man day is calculated not on the basis of 441 acres in the control area but on the basis of 882 acres. This gives a figure which falls between the average acres per man day for 1935 & 1936.

Roy G. Pierce.

Submitted June 30, 1936 by Ralph W. Welch, Agent.

ANALYSIS OF CHECKING
RIBES ERADICATION

1936

ANALYSIS OF CHECKING MADE IN 1936
OF RIBES ERADICATION CARRIED ON IN
1934, 1935 and 1936

MARYLAND

Table Showing Results of Checking in 1936

County	Type of Work	Acres Checked	Average Per Acre	
			Ribes	Feet Live Stem
Garrett	Crew, Initial	14.5	28.6	29.2
"	" 1st rework	4.3	19.9	20.7
Allegany	Scout, 2nd rework	7.5	29.2	53.2
Washington	" " "	4.66	2.9	1.8
"	Initial	2.5	3.2	2.4
Frederick	Crew, 1st rework	11.4	2.9	3.4
"	" Initial	2.5	4.8	10.4

Above data appears in Table 17 in Mr. Yosts Annual Report for Maryland for 1936.

BLISTER RUST CONTROL CHECKS

County - Towns

State of Georgia

Pine Lot No.	Date 1st Working	Bushes 1st Working	Acres of Ribes	Date of Check	Sprouts	Seedlings	Bushes	Man hours 1st wkg.	M-hrs. on checks
1-T*	Dec., 1935	98380	20	Aug., 1936	896	5613	237	790	360
2-T*	Jan. & Feb. 1936								
3-T*	Feb. 1936	28570	10	Aug., 1936	461	3967	38	195	130
4-T*	Feb. 1936	21510	5	Aug., 1936	48	2867	14	175	150
5-T*	Feb. 1936	82420	10	Aug., 1936	76	3112	29	895	190
6-T	Feb. 1936	26210	5	Aug., 1936	38	3021	41	270	170
	Mar.-Nov 1936								
7-T	May, 1936	538485	50	Sept., 1936	78	5211	12	6240	520
8-T	July, 1936	60710	5	Sept., 1936	9	213	7	690	295
		31198	5	Sept., 1936	0	178	16	430	180
Totals		832790	110		1606	24182	394	9635	1995

* This eradication was done during the winter months, which accounts for large number of bushes on checks.

Pine Lot Locations

- 1-T Mt. Enotah and vicinity.
- 2-T Egypt Fields
- 3-T Bell Mt.
- 4-T Eagle Mt.
- 5-T Bell Mt. (Cherry Cove)
- 6-T Hightower Mt. vicinity
- 7-T Rocky Knob (Unicoi Gap vicinity)
- 8-T Tray Mt. vicinity

Agent in charge, T. M. Corn
Supervisor, W. V. Zimmer

BLISTER RUST CONTROL CHECKS

County - Union

State of Georgia

Pine Lot No.	Date 1st Working	Bushes 1st Working	Acres of Ribes	Date of Check	Sprouts	Seedlings	Bushes	Man hrs. 1st wkg.	Man-hours on check
1 U	Sept. 1, 1935	265170	25	July 1936	411	2028	123	2120	240
2 U	Sept. 1935	24700	10	July 1936	46	721	15	210	165
3 U	Sept. & Oct 1935	22100	10	Aug. 1936	10	311	11	187	140
Totals		311970	45		467	3060	149	2517	545

Pine Lot Location

- 1 U Coosa Bald Vicinity
 - 2 U Wolf Pen Gap Vicinity
 - 3 U Tesnatee Gap Vicinity
- Agent in Charge, T. M. Corn.
Supervisor, W. V. Zimmer.

NORTH CAROLINA

Mr. Teague, State Leader, has given results of checking in detail on pages 17 to 30 inclusive of his annual report for 1936. A summary of these checks on cultivated bushes destroyed in 1934 and 1935 and checked in 1935 and 1936 follows:

County	No. of Places Where Culti. Ribes were Destroyed.				No. of Cultivated Ribes Destroyed			
	Initially in		On check		Initially		On check	
	1934	1935	1936	1935, '36	In 1935, 1936	1935	1936	
Alexandria		29	0	0 1	730	0	0	7
Alleghany		116	31	0 8	6801	2014	0	494
Ashe		125	0	0 46	7383	0	0	671
Buncombe	185	0	0	23 17	5339	0	411	44
Surry		18	0	0 0	1066	0	0	0
Watauga		30		11	4637	0	0	101
Wilkes		252	0	0 25	7542	0	0	881
	185	570	31	23 108	33498	2014	411	2198

Ribes returned or sprouted at 39 of the 786 places initially worked: this is 4.96% of the places with Ribes. The number of Ribes found and destroyed in initial working was 35,512, in the checks 2609 or 6.7% of those found originally. The above table is for all cultivated Ribes except R aureum and odoratum.

An analysis of the checking of the eradication of wild Ribes in Avery County is here given. The detailed report is found in tables which follow. 16 plot checks were made and two general checks were made. The 16 check plots covered 8 acres, 138 wild bushes were found on the check plots averaging 17.2 bushes per acre. The number of wild Ribes bushes pulled initially in five acres analyzed in Avery County amounted to 93,414, on 6,732 acre or at an average of 13.9 bushes per acre.

TENNESSEE

The results of checking 10 areas in Johnson County are shown in accompanying tables. In only two of them was the initial work satisfactory, that is, checks revealed less than 25 feet of live stem per acre. The agent was planning on reworking most of these in the fall of 1936, and a few in spring 1937.

VIRGINIA

The results of three checks made in 1936 are given on following pages. One area was initially worked in 1934, and second in 1935 and a third this year.

The checks on 1934 areas show 26 bushes and 98 feet of live stem per acre.

The checks on 1935 areas shows 21 bushes and 56 feet of live stem per acre.

The checks on 1936 areas shows 5.5 bushes and 5.6 feet of live stem per acre

The results of checking on 26 different areas in Virginia in 1936 is given in detail in the annual report by State Leader Luce of Virginia. Checking was carried on in seven counties. The total area originally worked, when checks were later made, amounted to 10,243 acres. The acreage checked amounted to $79 \frac{3}{4}$ acres, which is 0.778% of the total.

In the initial working 441,852 Ribes were removed, which would give an average of 43.1 Ribes per acre. On the checks 349 Ribes were pulled, an average of 4.3 bushes per acre.

The first part of the report is devoted to a general survey of the situation in the country. It is followed by a detailed account of the work done during the year. The report concludes with a summary of the results and a list of the names of the members of the committee.

The second part of the report is devoted to a detailed account of the work done during the year. It is followed by a summary of the results and a list of the names of the members of the committee.

The third part of the report is devoted to a detailed account of the work done during the year. It is followed by a summary of the results and a list of the names of the members of the committee.

The fourth part of the report is devoted to a detailed account of the work done during the year. It is followed by a summary of the results and a list of the names of the members of the committee.

The fifth part of the report is devoted to a detailed account of the work done during the year. It is followed by a summary of the results and a list of the names of the members of the committee.

WEST VIRGINIA

In West Virginia, all control areas seem to have been checked. A record of the areas checked follows. In none of the areas did the checks reveal bushes per acre averaging more than 18, or leaf-bearing stem per acre over 26.2. 17 of the areas checked were worked in late fall 1935 and should be classed as dormant eradication.

The following table shows number of bushes per acre pulled in fall 1935, spring 1936 and check of 1936.

Average Number of Ribes per Acre

<u>Fall 1935</u>	<u>Summer 1936</u>	<u>Check in 1936</u>
51.7	98.6	5.6
146.3	67.1	12.0
97.4	-	10.0
10.4	16.2	2.0
66.0	66.6	4.0
50.6	82.1	13.0
46.3	29.8	2.0
23.0	11.3	1.5
4.6	5.9	0.3
0.9	0.9	0.0
4.5	10.1	0.4
5.9	6.3	0.5
0.1	0.1	0.
2.9	5.1	0.4
0.1	12.1	0.8
12.8	12.1	1.7
2.0	3.8	1.5

Of the 17 areas listed on the previous page, all were worked in 1935, 15 were reworked in 1936. Of these 15, nine areas had more bushes per acre in 1936 than in 1935, showing that in dormant eradication in the majority of cases, less than 50% of the bushes were pulled in the first working.

It is a very interesting and important subject to the public
and the people of the United States. The government has
the duty to protect the people from the dangers of
the world. The government has the duty to protect the
people from the dangers of the world. The government has
the duty to protect the people from the dangers of the world.

REPORT ON CHECKING IN 1936 OF 1935
WILD RIBES ERADICATION IN AVERY COUNTY
NORTH CAROLINA

Area No.	Plot No.	Date Checked 1935	Acreage Worked	Time Required (Hours)	No. Bushes Found in Check	No. Ft. Live Stem	Checked by
30	1	9/4	.25	1.00	15	12	Will Cole
30	2	9/4	.25	.80	13	10	Will Cole
30	3	9/4	.25	1.00	12	10	Will Cole
23		6/10	Gen.	3.00	346	29	R. W. Leiby, Jr.
21	4	9/9	.25	.50	5	1	Jess Clark
17	7	9/9	.25	1.00	40	16	Jess Clark
23		June	Gen.	.50	2	75	H. B. Teague
17	8	9/9	.25	3.00	2	6	Jess Clark
21	9	10/6	.25	2.00	2	1	Jess Clark
21	10	10/6	.25	3.00	0	0	Jess Clark
21	11	10/6	.25	2.00	13	13	Jess Clark
21	12	10/6	.25	1.00	8	4	Jess Clark
21	13	10/6	.25	.50	8	3.5	Jess Clark
21	14	10/6	.25	2.00	10	2.5	Jess Clark
21	15	10/6	.25	2.00	10	5	Jess Clark
21	16	10/6	.25	2.00	0	0	Jess Clark
18	17	10/7	.25	2.00	0	0	Jess Clark
18	18	10/7	.25	2.00	0	0	Jess Clark
Total 18			8.00	30.30	486	188	

TABLE 10
 SUMMARY OF DATA FOR THE STUDY OF THE
 EFFECT OF TEMPERATURE ON THE
 RATE OF REACTION

Run	Temp. (°C)	Time (min)	Initial Conc. (M)	Final Conc. (M)	Rate (M/min)	Order	Half-life (min)
1	25	10	0.10	0.08	0.002	1	5
2	25	20	0.10	0.06	0.002	1	10
3	25	30	0.10	0.04	0.002	1	15
4	25	40	0.10	0.02	0.002	1	20
5	30	10	0.10	0.07	0.003	1	3.3
6	30	20	0.10	0.05	0.003	1	6.7
7	30	30	0.10	0.03	0.003	1	10
8	30	40	0.10	0.01	0.003	1	13.3
9	35	10	0.10	0.06	0.004	1	2.5
10	35	20	0.10	0.04	0.004	1	5
11	35	30	0.10	0.02	0.004	1	7.5
12	35	40	0.10	0.01	0.004	1	10
13	40	10	0.10	0.05	0.005	1	2
14	40	20	0.10	0.03	0.005	1	4
15	40	30	0.10	0.01	0.005	1	6
16	45	10	0.10	0.04	0.006	1	1.7
17	45	20	0.10	0.02	0.006	1	3.3
18	45	30	0.10	0.01	0.006	1	5
19	50	10	0.10	0.03	0.007	1	1.4
20	50	20	0.10	0.01	0.007	1	2.9
21	55	10	0.10	0.02	0.008	1	1.2
22	55	20	0.10	0.01	0.008	1	2.5
23	60	10	0.10	0.01	0.009	1	1.1
24	60	20	0.10	0.005	0.009	1	2.2
25	65	10	0.10	0.005	0.010	1	1.0
26	65	20	0.10	0.002	0.010	1	2.0
27	70	10	0.10	0.002	0.010	1	1.0
28	70	20	0.10	0.001	0.010	1	2.0
29	75	10	0.10	0.001	0.010	1	1.0
30	75	20	0.10	0.0005	0.010	1	2.0
31	80	10	0.10	0.0005	0.010	1	1.0
32	80	20	0.10	0.0002	0.010	1	2.0
33	85	10	0.10	0.0002	0.010	1	1.0
34	85	20	0.10	0.0001	0.010	1	2.0
35	90	10	0.10	0.0001	0.010	1	1.0
36	90	20	0.10	0.00005	0.010	1	2.0
37	95	10	0.10	0.00005	0.010	1	1.0
38	95	20	0.10	0.00002	0.010	1	2.0
39	100	10	0.10	0.00002	0.010	1	1.0
40	100	20	0.10	0.00001	0.010	1	2.0
41	105	10	0.10	0.00001	0.010	1	1.0
42	105	20	0.10	0.000005	0.010	1	2.0
43	110	10	0.10	0.000005	0.010	1	1.0
44	110	20	0.10	0.000002	0.010	1	2.0
45	115	10	0.10	0.000002	0.010	1	1.0
46	115	20	0.10	0.000001	0.010	1	2.0
47	120	10	0.10	0.000001	0.010	1	1.0
48	120	20	0.10	0.0000005	0.010	1	2.0
49	125	10	0.10	0.0000005	0.010	1	1.0
50	125	20	0.10	0.0000002	0.010	1	2.0
51	130	10	0.10	0.0000002	0.010	1	1.0
52	130	20	0.10	0.0000001	0.010	1	2.0
53	135	10	0.10	0.0000001	0.010	1	1.0
54	135	20	0.10	0.00000005	0.010	1	2.0
55	140	10	0.10	0.00000005	0.010	1	1.0
56	140	20	0.10	0.00000002	0.010	1	2.0
57	145	10	0.10	0.00000002	0.010	1	1.0
58	145	20	0.10	0.00000001	0.010	1	2.0
59	150	10	0.10	0.00000001	0.010	1	1.0
60	150	20	0.10	0.000000005	0.010	1	2.0
61	155	10	0.10	0.000000005	0.010	1	1.0
62	155	20	0.10	0.000000002	0.010	1	2.0
63	160	10	0.10	0.000000002	0.010	1	1.0
64	160	20	0.10	0.000000001	0.010	1	2.0
65	165	10	0.10	0.000000001	0.010	1	1.0
66	165	20	0.10	0.0000000005	0.010	1	2.0
67	170	10	0.10	0.0000000005	0.010	1	1.0
68	170	20	0.10	0.0000000002	0.010	1	2.0
69	175	10	0.10	0.0000000002	0.010	1	1.0
70	175	20	0.10	0.0000000001	0.010	1	2.0
71	180	10	0.10	0.0000000001	0.010	1	1.0
72	180	20	0.10	0.00000000005	0.010	1	2.0
73	185	10	0.10	0.00000000005	0.010	1	1.0
74	185	20	0.10	0.00000000002	0.010	1	2.0
75	190	10	0.10	0.00000000002	0.010	1	1.0
76	190	20	0.10	0.00000000001	0.010	1	2.0
77	195	10	0.10	0.00000000001	0.010	1	1.0
78	195	20	0.10	0.000000000005	0.010	1	2.0
79	200	10	0.10	0.000000000005	0.010	1	1.0
80	200	20	0.10	0.000000000002	0.010	1	2.0
81	205	10	0.10	0.000000000002	0.010	1	1.0
82	205	20	0.10	0.000000000001	0.010	1	2.0
83	210	10	0.10	0.000000000001	0.010	1	1.0
84	210	20	0.10	0.0000000000005	0.010	1	2.0
85	215	10	0.10	0.0000000000005	0.010	1	1.0
86	215	20	0.10	0.0000000000002	0.010	1	2.0
87	220	10	0.10	0.0000000000002	0.010	1	1.0
88	220	20	0.10	0.0000000000001	0.010	1	2.0
89	225	10	0.10	0.0000000000001	0.010	1	1.0
90	225	20	0.10	0.00000000000005	0.010	1	2.0
91	230	10	0.10	0.00000000000005	0.010	1	1.0
92	230	20	0.10	0.00000000000002	0.010	1	2.0
93	235	10	0.10	0.00000000000002	0.010	1	1.0
94	235	20	0.10	0.00000000000001	0.010	1	2.0
95	240	10	0.10	0.00000000000001	0.010	1	1.0
96	240	20	0.10	0.000000000000005	0.010	1	2.0
97	245	10	0.10	0.000000000000005	0.010	1	1.0
98	245	20	0.10	0.000000000000002	0.010	1	2.0
99	250	10	0.10	0.000000000000002	0.010	1	1.0
100	250	20	0.10	0.000000000000001	0.010	1	2.0
101	255	10	0.10	0.000000000000001	0.010	1	1.0
102	255	20	0.10	0.0000000000000005	0.010	1	2.0
103	260	10	0.10	0.0000000000000005	0.010	1	1.0
104	260	20	0.10	0.0000000000000002	0.010	1	2.0
105	265	10	0.10	0.0000000000000002	0.010	1	1.0
106	265	20	0.10	0.0000000000000001	0.010	1	2.0
107	270	10	0.10	0.0000000000000001	0.010	1	1.0
108	270	20	0.10	0.00000000000000005	0.010	1	2.0
109	275	10	0.10	0.00000000000000005	0.010	1	1.0
110	275	20	0.10	0.00000000000000002	0.010	1	2.0
111	280	10	0.10	0.00000000000000002	0.010	1	1.0
112	280	20	0.10	0.00000000000000001	0.010	1	2.0
113	285	10	0.10	0.00000000000000001	0.010	1	1.0
114	285	20	0.10	0.000000000000000005	0.010	1	2.0
115	290	10	0.10	0.000000000000000005	0.010	1	1.0
116	290	20	0.10	0.000000000000000002	0.010	1	2.0
117	295	10	0.10	0.000000000000000002	0.010	1	1.0
118	295	20	0.10	0.000000000000000001	0.010	1	2.0
119	300	10	0.10	0.000000000000000001	0.010	1	1.0
120	300	20	0.10	0.0000000000000000005	0.010	1	2.0
121	305	10	0.10	0.0000000000000000005	0.010	1	1.0
122	305	20	0.10	0.0000000000000000002	0.010	1	2.0
123	310	10	0.10	0.0000000000000000002	0.010	1	1.0
124	310	20	0.10	0.0000000000000000001	0.010	1	2.0
125	315	10	0.10	0.0000000000000000001	0.010	1	1.0
126	315	20	0.10	0.00000000000000000005	0.010	1	2.0
127	320	10	0.10	0.00000000000000000005	0.010	1	1.0
128	320	20	0.10	0.00000000000000000002	0.010	1	2.0
129	325	10	0.10	0.00000000000000000002	0.010	1	1.0
130	325	20	0.10	0.00000000000000000001	0.010	1	2.0
131	330	10	0.10	0.00000000000000000001	0.010	1	1.0
132	330	20	0.10	0.000000000000000000005	0.010	1	2.0
133	335	10	0.10	0.000000000000000000005	0.010	1	1.0
134	335	20	0.10	0.000000000000000000002	0.010	1	2.0
135	340	10	0.10	0.000000000000000000002	0.010	1	1.0
136	340	20	0.10	0.000000000000000000001	0.010	1	2.0
137	345	10	0.10	0.000000000000000000001	0.010	1	1.0
138	345	20	0.10	0.0000000000000000000005	0.010	1	2.0
139	350	10	0.10	0.0000000000000000000005	0.010	1	1.0
140	350	20	0.10	0.0000000000000000000002	0.010	1	2.0
141	355	10	0.10	0.0000000000000000000002	0.010	1	1.0
142	355	20	0.10	0.0000000000000000000001	0.010	1	2.0
143	360	10	0.10	0.0000000000000000000001	0.010	1	1.0
144	360	20	0.10	0.00000000000000000000005	0.010	1	2.0
145	365	10	0.10	0.00000000000000000000005	0.010	1	1.0
146	365	20	0.10	0.00000000000000000000002	0.010	1	2.0
147	370	10	0.10	0.00000000000000000000002	0.010	1	1.0
148	370	20	0.10	0.00000000000000000000001	0.010	1	2.0
149	375	10	0.10	0.00000000000000000000001	0.010	1	1.0
150	375	20	0.10	0.000000000000000000000005	0.010	1	2.0
151	380	10	0.10	0.000000000000000000000005	0.010	1	1.0
152	380	20	0.10	0.000000000000000000000002	0.010	1	2.0
153	385	10	0.10	0.000000000000000000000002	0.010	1	1.0
154	3						

REPORT ON CHECKING OF RIBES ERADICATION IN WEST VIRGINIA

POCAHONTAS COUNTY, CASS QUADRANGLE

Block No.	Date Worked	Acres Worked		By Scout	Total	Number of Ribes Pulled		Live Stem	No. Ft
		By Crew				Total	Per Acre		
58	9/26-10/4/35 6/11-18/36 6/18/36	38 "		0	38 "	1964 3756 6	51.7 98.8 5.6	5.41	5.1
59	9/6-10/12/35 5/27-6/19/36 6/18/36	104 "		0	104 "	15224 6980 3	146.3 67.1 12.0	5.75	23.0
61	9/23-10/11/35 6/17/36	72 "		0	72 "	7018 7	97.4 10.0	10.42	14.8
62	10/9/25/35 6/19/22/36 6/22-24/36	92 "		0	92 "	965 1488 2	10.4 16.2 2	1.12	1.12
67	10/16-11/6/35 6/19-24/36 6/22-26/36	39 "		0	39 "	2574 2600 5	66.0 66.6 4.0	6.5	5.2
69	7/1-7/36 7/23-26/36	35 "		0	35 "	1047 6	29.2 4.6	4.3	3.33
70	8/31-9/29/36 10/14/36	33 "		0	33 "	7910 8	239.7 16.0	9.5	19.0
71	9/8-10/36 10/13/36	94 "		0	94 "	4790 6	50.9 4.6	16.0	12.3
85	8/3-7/36 10/21/36	7 "		0	7 "	1298 0	185.4	0	0
93	5/18-6-4/36 6/25/36	72 "		0	72 "	5967 5	82.9 10.0	3.25	6.5

REPORT ON CHECKING OF RIBES ERADICATION IN WEST VIRGINIA

POCAHONTAS COUNTY - CASS QUADRANGLE

Block No.	Date Worked	Acres Worked		By Scout	Total	Number of Ribes Pulled		Live Stem	No.Ft.
		By Crew	By Scout			Total	Per Acre	Total	Per Acre
93 A	6/4-30/36 8/19-30/36 9/20/36	48	0		48	15943	332.1		
		By Checker	1		1	10	10.0	21.25	21.25
101	5/4-26/36 5/25-27/36	204	0		204	15166	74.3		
		By Checker	4.2		4.2	46	11.0	103.83	24.7
103	10/13-19/36 10/19/36	17	0		17	1646	96.8		
		By Checker	.35		.35	2	5.7	7.3	20.8
103 A	5/26-29/36 5/20/36	21	0		21	2007	95.5		
		By Checker	.4		.4	4	10.0	10.5	26.2
109	8/25-9-1/36 9/10/36	11	0		11	1898	172.5		
		By Checker	.25		.25	2	8.0	5.9	23.6
110	9/18-10-9/36 10/13/36	37	0		37	6623	17.9		
		By Checker	0.60		.60	4	6.7	12.2	20.3
110 A	9/3-18/36 10/5/36	52	0		52	7947	15.3		
		By Checker	0.75		0.75	8	10.6	6.6	8.8
111	10/0-13/36 10/13/36	28	0		28	7846	280.2		
		By checker	0.60		0.60	4	6.7	3.2	5.3
112	9/21-10-12/36 10/1-2/36	105	0		105	10459	99.6		
		By checker	0.75		0.75	14	18.6	11.4	15.2
116	7/9/36 7/23/36	10	0		10	479	47.9		
		By checker	0.35		0.35	2	5.7	7.4	21.1
119	7/21-22/36 7/23/36	18	0		18	1164	67.7		
		By checker	0.45		0.45	3	6.6	1.3	2.9

REPORT ON CHECKING OF RIBES ERADICATION IN WEST VIRGINIA

POCAHONTAS COUNTY, CASS QUADRANGLE

Block No.	Date Worked	Acres Worked		By Scout	Total	Number of Ribes Pulled		Live Stem	No. Feet
		By Crew	By Checker			Total	Per Acre		
120	7/13/36 10/21/36	15- By Checker	0 0.30	0 0.30	15. 0.30	2639 3	175.8 10.0	3.4	11.3
125	5/29-6-1/36 6/1/36	15 By checker	0 0.30	0 0.30	15. 0.30	1283 4	85.5 13.3	2.2	7.3
130	5/11-6-9/36	187 By checker	0 3.50	0 3.50	187 3.50	7978 24	42.6 6.8	25.6	7.3
131	5/6-8/36 6/3/36	14 By checker	0 0.70	0 0.70	14. 0.70	1706 3	121.8 4.2	5.1	7.3
132	5/4-6-6-9/36 6/9/36	91 By checker	0 1.40	0 1.40	91 1.40	6120 5	67.3 3.6	35.8	25.5
133	5/21/36 6/19/36	23 By checker	0 0.40	0 0.40	23 0.40	647 0	28.1 0	0	0
140	8/12-20/36 6/25/36	26 By checker	0 0.45	0 0.45	26 0.45	4421 1	170.0 2.2	0.7	1.5
147	6/25-26/36 6/26/36	38 By checker	0 0.65	0 0.65	38 0.65	1396 4	36.7 6.1	3.7	5.7
148	5/1-4-6-8-9/36 6/9/36	42 By checker	0 0.80	0 0.80	42 0.80	1229 2	29.2 2.5	.8	1.0
150	5/6-7/36 6/7/36	12 By checker	0 0.30	0 0.30	12 0.30	7887 4	657.2 13.3	4.1	13.6

REPORT ON CHECKING OF RIBES ERADICATION IN WEST VIRGINIA

POCAHONTAS COUNTY, CASS QUADRANGLE

Block No.	Date Worked	Acres Worked		By Scout.	Total	Number of Ribes Pulled		Live Stem No. Ft. Total	Per A.
		By Crew	By Scout.			Total	Per Acre		
36	10-7-11-15/35	141	0		141	7148	50.6		
	5/11-6-10/36		0			11585	82.1		
	6/10/36		20	2	2	26	13	21.8	10.9
40	9/23-25/35	14	0		14	649	46.3		
	6/25-26/36		0		0	417	29.8		
	6/26/36		0.5	0.5	0.5	1	2.0	.8	1.6

PENDLETON COUNTY - CIRCLEVILLE QUADRANGLE

41	10/16-22/35	363	0		363	8361	23.0		
	7/22-24/36					4087*	11.3		
	7/24/36		6	6	6	9	1.5	11	1.8
	* 2341 Ribes pulled in 1936 yielded 119 root sprouts.							Root sprouts made up 5.13% of	
	bushes pulled in second working.								
44	11/4-11/35	388	0		388	1766	4.6		
	7/3-17/36		"		"	2259	5.9		
	7/17-20/36		6	6	6	2	0.3	3	0.5
59	9/10-10-22/36	1199	0		1199	1916	1.5		
	10/22/36		5	5	10	4	0.4	7.5	0.8

PENDLETON COUNTY - WEST VIRGINIA - MCDOWELL QUADRANGLE

11	10/5-6/36	0	416		416	52	0.1		
	10/6/36		5		5	0	0	0	0
15	10/8/36	0	104		104	7	0.06		
	10/8/36		General Scouting			0	0	0	0
16	10/2/36	0	128		128	79	0.6		
	10/2/36		General Scouting			0	0	0	0
17	10/2/36	0	301		301	71	0.2		
	10/2/36		General Scouting			0	0	0	0
18	10/2/36	0	81		81	6	0.07		
	10/2/36		2		2	0	0	0	0

REPORT ON CHECKING RIBES ERADICATION IN WEST VIRGINIA POCAHONTAS COUNTY - WARM SPRINGS QUADRANGLE

Block No.	Date Worked	Acres Worked		Total	Number of Ribes Pulled		Live Stem No.	Ft.
		By Crew	By Scout		Total	Per Acre		
46 A	8/5-11/36 9/9/36	4 By checker	0 0.10	4 0.10	191 1	47.8 10.0	2 20	
PENDLETON COUNTY - CIRCLEVILLE QUADRANGLE								
5	11/30-12/4/35 6/26-7/1/36 7/1/36	97 By checker	299 3	396 3	371 367 0	.9 .9 .0	0 0	
6	12/27/35 6/25-26/36 6/26/36	87 By checker 4	37 3	124 7	559 1255 3	.4.5 10.1 .4	1.5 0.2	
7	11/19-21/35 7/1-8/36 7/8/36	112 Checker 2	205 4	317 6	1892 1993 3	5.9 6.3 .5	300 0.5	
9	11/25-26/35 7/9/36 7/9/36	0 0 By checker	204 3	204 3	20 25 0	.1 .1 0	0 0	
10	11/11-13/35 7/2-9/36 7/9/36	244 Checker 2	87 3	331 5	972 1704 22	2.9 5.1 .4	3.0 0.6	
11	10/24/35 7/9-10/36 7/10/36	50 Checker 2	111 2	161 4	12 1944 3	1 12.1 .8	2.0 0.50	
PENDLETON COUNTY - MCDOWELL QUADRANGLE								
28	10/19/36 10/19/36	By checker	340 4	340 4	265 0	.7 0	0 0	
29	10/19/36 10/19/36	By checker	160 2	160 2	31 0	0.2 0	0 0	

Date _____
 Page _____
 Name _____
 Class _____
 School _____
 City _____
 State _____
 Zip _____

I am writing to you because I am interested in your work. I have been thinking about you a lot lately and how much you have accomplished. I hope you are doing well and that everything is going smoothly.

I have been thinking about you a lot lately and how much you have accomplished. I hope you are doing well and that everything is going smoothly. I have been thinking about you a lot lately and how much you have accomplished.

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REPORT ON CHECKING OF RIBES ERADICATION IN WEST VIRGINIA
PENDLETON COUNTY - MCDOWELL QUADRANGLE

Block No.	Date Worked	Acres Worked		Number of Ribes Pulled		Live Stem	
		By Crew	By Scout	Total	Per Acre	Total	Per Acre
19	10/5/36 10/5/36	0	300	300	0.01	0	0
		By checker	General	Scouting			
21	10/16/36 10/16/36	17	109	126	21.7 0.8	9	1.5
		By checker	3	6			
23	10/6-7-8/36 10/6-7-8-36	0	895	895	0.02	0	0
		By checker	General	Scouting			
25	10/19/10-21/36 10/21/36	182	771	953	1.8 1.2	8.6	1.1
		By checker	4	8			
26	10/8-9-36 10/9/36	86	542	628	4.4 1.4	8	1.1
		By checker	4	7			

POCAHONTAS COUNTY - WARM SPRINGS QUADRANGLE

38	7/2-6/36 7/6/36	13	0	13.0	1371	10.5 8.6	2.4	6.5
		By checker	0.35	0.35	3			
40	7/21/24/36 7/22-27/36	30	0	30.0	2501	8.3 3.8	3.5	4.3
		By checker	0.80	0.80	3			
42	7/7-10/36 7/10/36	25	0	25	2155	86.2 4.0	13.1	26.2
		By checker	0.50	0.50	2			
44	8/17-26/36 9/4-10/36	15	0	15	2232	148.8 4.4	3	4.4
		By checker	0.45	0.45	2			
45	8/4-5/36 8/27/36	17	0	17.	727	42.7 0	0	0
		By checker	0.25	0.25	0			
46	8/5-11/36 9/19/36	11	0	11	767	69.7	0	0
		By checker	0.20	0.20	0			

REPORT ON CHECKING RIBES ERADICATION IN WEST VIRGINIA PENDLETON COUNTY - MCDOWELL QUADRANGLE

Block No.	Date Worked	Acres Worked		Number of Ribes		Live stem	
		By Crew	By Scout	Total	Per A	Total	Per Acre
30	10/19/36	103	2	103	0.2	0	0
	10/19/36	By checker			0		
4	12/12-1/35	110	193	303	18.2	20	2.5
	7/9-10/36	4-By checker	4	8	1.7		
13	12/5-6/35	64	180	244	2.0		
	6/19-22/36	64	180	244	3.8		
	6/24/36	Checker 4	6	10	1.5	20	1.3

PENDLETON COUNTY - WEST VIRGINIA - FORT SEYBERT QUADRANGLE

JOHNSON COUNTY - TENNESSEE

Forge Mtn.	4/2/36	65	0	65	34222	526.5	223	446.0
Cold Branch	7/10/36	Checker 5	0	5	326	652		
Doe Mtn.	6/8/35	175	0	175	1456	8.3	28.8	460.8
South End	6/8/35	1/16	0	1/16	16	256		
Pond Mtn.	7/36	110	0	110	4223	38.4		
Gentry Creek	8/4	By checker 5	0	5	86	192.0	27.2	54.4
Gentry Creek	4/5-6/36	250	0	250	144187	576.3	212.2	163.1
	7/17-7/20/36	1.3	0	1.3	705	542.3		
Pond Mtn.	7/36	300	0	300	52274	174.2		
Laurel Br.	8/4-8-11/36	3.0	0	3.0	386	128.7	171.1	57.0
Pond Mtn.	7/36	33	0	33	4471	135.5	9.7	16.1
Rough Bottom	8/10/36	By checker 6	0	.6	25	41.6		

REPORT ON CHECKING RIBES ERADICATION IN TENNESSEE *

JOHNSON COUNTY

Block No.	Date Worked	Acres		By Scout	Total	No. of Ribes Pulled		Live Stem		No. Ft. Per Acre
		By Crew	Worked			Total	Per A	Total		
Pond Mountain Skider Ridge	7/36 8/10/36	5		0	5	1896	379.2	180.0	12.9	129.0
Pond Mountain Rogers Bridge	7/36 8/3/11/36	10		0	10	869	869	242.9	92.4	132.0
Pond Mountain Slide Hollow	7/36 8/3-8-11/36	35		0	35	3126	89.3	93.2	135.3	61.5
Pond Mountain Tank Hollow	7/36 8/10/36	25		0	25	3005	120.2	54	11.8	23.6

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REPORT ON RIBES ERADICATION IN VIRGINIA - AUGUSTA COUNTY

Block No. 1	9/21-34/10-12/34	310	70	380	2125	5.6				
G. W. N. F.										
Little River	8/14/8/21	5	0	.5	13	26	49	98		
	1936									
Block No. 2	10/5-10/29/36	28	322	350	1005	2.9				
	10/26/35	2	0	2	11	5.5	1.2	5.6		
Block 66	11/29/35	315	0	315	4126	13.4				
	10/12-14/36	1	0	1	21	21	56.3	56.3		

HIGHLAND COUNTY - VIRGINIA

*Note: So many bushes were located on the checks in Tennessee that most of the areas were scheduled for reworking in fall of 1936.

NURSERY SANITATION

Nursery		Acres Worked	1932			Cost		1933			Cost		1934			Cost		1935			Cost		1936			No. of Man- Days	No. of White Pines In Nursery
			Ribes Destroyed		Culti.			Ribes Destroyed		Culti.			Ribes Destroyed		Culti.			Ribes Destroyed		Culti.							
			Wild	(1)				Wild	(2)				Wild	(3)				Wild	(4)				Wild	(5)	Wild		
State Dept. Forestry	- College Park	2010			10	12.50											2250	-	4	15.00		340			1	100,000	
"	" " Huntington Manor																					86	11,390		94	34,000	
"	" " Sunny Side																2240	-	1	7.00		240			2	300,000	
Gude, A. & Son	Rockville							172	-	15 ¹	7.00	372		5.00			372	-	-	10.00		850			1	5,000	
Harrison's Nursery	Berlin							186	-	3	5.00															1,000	
Ley's Nursery	Camp Springs							40	-	0 ¹⁶	2.50															150	
Quaint Acres "	Silver Spring							186	-	50	5.00	186		5.00			186			10.00		75			1	200	
Rock Creek "	Rockville							186	-	23	10.00											530			1	525	
Rolandhurst "	Hebron							186	-	-	5.00	186		9.00								250			1	400	
Small & Sons, J. H.	Norbeck							186	-	3	9.00	186		8	5.00	186	-	-	10.00		500		20			3,000	
Titus Nursery Co.,	Baltimore ⁽⁴⁾																										
Towson Nurseries	Towson							372	-	8	25.00	372		10.00			372			5.00		855			2	4,900	
Westminister Nurs.	Westminister																										
Kent Island Nursery		2010			10	12.50	1714	-	104	68.50	1302	0	8	34.00	5606	0	5	57.00	3946	11,390	20	105	\$250.00			2	21

(1) Includes mile zone for cultivated black currants

(2) Figures in red represent bushes remaining in Control area

(3) Cost estimated at \$5.00 per day for Messrs. Fracker, Sheals and Pierce, \$4.00 for Hodgkins, Stevens et al.

(4) Nursery is near Waynesboro, Va., Baltimore is but an agency.

The following Nurseries were granted Federal permits: A Gude & Son, Quaint Acres, Rock Creek Rolandhurst, Small & Sons.

1932		1933		1934		1935		1936	
Distribution of Costs		Distribution of Costs		Distribution of Costs		Distribution of Costs		Distribution of Costs	
Federal	\$7.50	Federal	\$52.00	Federal	\$34.00	Federal	\$50.00	Federal	\$250.00
State	3.00	State	10.00	State	0	State	7.00	State	
Private	1.70	Private	6.00	Private	0	Private	00	Private	
Total	\$ 12.50	Total	\$34.00	Total	\$34.00	Total	\$57.00	Total	\$250.00

1931		1932		1933		1934		1935		1936		1937		1938		1939		1940		1941		1942		1943		1944		1945		1946		1947		1948		1949		1950		1951		1952		1953		1954		1955		1956		1957		1958		1959		1960		1961		1962		1963		1964		1965		1966		1967		1968		1969		1970		1971		1972		1973		1974		1975		1976		1977		1978		1979		1980		1981		1982		1983		1984		1985		1986		1987		1988		1989		1990		1991		1992		1993		1994		1995		1996		1997		1998		1999		2000		2001		2002		2003		2004		2005		2006		2007		2008		2009		2010		2011		2012		2013		2014		2015		2016		2017		2018		2019		2020		2021		2022		2023		2024		2025		2026		2027		2028		2029		2030		2031		2032		2033		2034		2035		2036		2037		2038		2039		2040		2041		2042		2043		2044		2045		2046		2047		2048		2049		2050		2051		2052		2053		2054		2055		2056		2057		2058		2059		2060		2061		2062		2063		2064		2065		2066		2067		2068		2069		2070		2071		2072		2073		2074		2075		2076		2077		2078		2079		2080		2081		2082		2083		2084		2085		2086		2087		2088		2089		2090		2091		2092		2093		2094		2095		2096		2097		2098		2099		2100		2101		2102		2103		2104		2105		2106		2107		2108		2109		2110		2111		2112		2113		2114		2115		2116		2117		2118		2119		2120		2121		2122		2123		2124		2125		2126		2127		2128		2129		2130		2131		2132		2133		2134		2135		2136		2137		2138		2139		2140		2141		2142		2143		2144		2145		2146		2147		2148		2149		2150		2151		2152		2153		2154		2155		2156		2157		2158		2159		2160		2161		2162		2163		2164		2165		2166		2167		2168		2169		2170		2171		2172		2173		2174		2175		2176		2177		2178		2179		2180		2181		2182		2183		2184		2185		2186		2187		2188		2189		2190		2191		2192		2193		2194		2195		2196		2197		2198		2199		2200		2201		2202		2203		2204		2205		2206		2207		2208		2209		2210		2211		2212		2213		2214		2215		2216		2217		2218		2219		2220		2221		2222		2223		2224		2225		2226		2227		2228		2229		2230		2231		2232		2233		2234		2235		2236		2237		2238		2239		2240		2241		2242		2243		2244		2245		2246		2247		2248		2249		2250		2251		2252		2253		2254		2255		2256		2257		2258		2259		2260		2261		2262		2263		2264		2265		2266		2267		2268		2269		2270		2271		2272		2273		2274		2275		2276		2277		2278		2279		2280		2281		2282		2283		2284		2285		2286		2287		2288		2289		2290		2291		2292		2293		2294		2295		2296		2297		2298		2299		2300		2301		2302		2303		2304		2305		2306		2307		2308		2309		2310		2311		2312		2313		2314		2315		2316		2317		2318		2319		2320		2321		2322		2323		2324		2325		2326		2327		2328		2329		2330		2331		2332		2333		2334		2335		2336		2337		2338		2339		2340		2341		2342		2343		2344		2345		2346		2347		2348		2349		2350		2351		2352		2353		2354		2355		2356		2357		2358		2359		2360		2361		2362		2363		2364		2365		2366		2367		2368		2369		2370		2371		2372		2373		2374		2375		2376		2377		2378		2379		2380		2381		2382		2383		2384		2385		2386		2387		2388		2389		2390		2391		2392		2393		2394		2395		2396		2397		2398		2399		2400		2401		2402		2403		2404		2405		2406		2407		2408		2409		2410		2411		2412		2413		2414		2415		2416		2417		2418		2419		2420		2421		2422		2423		2424		2425		2426		2427		2428		2429		2430		2431		2432		2433		2434		2435		2436		2437		2438		2439		2440		2441		2442		2443		2444		2445		2446		2447		2448		2449		2450		2451		2452		2453		2454		2455		2456		2457		2458		2459		2460		2461		2462		2463		2464		2465		2466		2467		2468		2469		2470		2471		2472		2473		2474		2475		2476		2477		2478		2479		2480		2481		2482		2483		2484		2485		2486		2487		2488		2489		2490		2491		2492		2493		2494		2495		2496		2497		2498		2499		2500		2501		2502		2503		2504		2505		2506		2507		2508		2509		2510		2511		2512		2513		2514		2515		2516		2517		2518		2519		2520		2521		2522		2523		2524		2525		2526		2527		2528		2529		2530		2531		2532		2533		2534		2535		2536		2537		2538		2539		2540		2541		2542		2543		2544		2545		2546		2547		2548		2549		2550		2551		2552		2553		2554		2555		2556		2557		2558		2559		2560		2561		2562		2563		2564		2565		2566		2567		2568		2569		2570		2571		2572		2573		2574		2575		2576		2577		2578		2579		2580		2581		2582		2583		2584		2585		2586		2587		2588		2589		2590		2591		2592		2593		2594		2595		2596		2597		2598		2599		2600		2601		2602		2603		2604		2605		2606		2607		2608		2609		2610		2611		2612		2613		2614		2615		2616		2617		2618		2619		2620		2621		2622		2623		2624		2625		2626		2627		2628		2629		2630		2631		2632		2633		2634		2635		2636		2637		2638		2639		2640		2641		2642		2643		2644		2645		2646		2647		2648		2649		2650		2651		2652		2653		2654		2655		2656		2657		2658		2659		2660		2661		2662		2663		2664		2665		2666		2667		2668		2669		2670		2671		2672		2673		2674		2675		2676		2677		2678		2679		2680		2681		2682		2683		2684		2685		2686		2687		2688		2689		2690		2691		2692		2693		2694		2695		2696		2697		2698		2699		2700		2701		2702		2703		2704		2705		2706		2707		2708		2709		2710		2711		2712		2713		2714		2715		2716		2717		2718		2719		2720		2721		2722		2723		2724		2725		2726		2727		2728		2729		2730		2731		2732		2733		2734		2735		2736		2737		2738		2739		2740		2741		2742		2743		2744		2745		2746		2747		2748		2749		2750		2751		2752		2753		2754		2755		2756		2757		2758		2759		2760		2761		2762		2763		27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Nursery	1932				1933				1934				1935				1936			
	Acres Worked	Ribes Wild	Destroyed Culti.	Cost	Acres Worked	Ribes Destroyed Wild	Culti.	Cost	Acres Worked	Ribes Wild	Destroyed Culti.	Cost	Acres Worked	Ribes Wild	Destroyed Culti.	Cost	Acres Worked	Ribes Wild	Destroyed Culti.	Cost
Wood Howell	Not Inspected			\$	Not Inspected			\$	Not Inspected			\$	150	0	26	\$ 23.00	525	0	0	\$ 13.25
Alta Vista	"				186	0	0	5.00	186	0		5.00	200	0	0	12.00	50	0	0	5.00
Wescott	"				200	0	0	5.00	200		247(1)	15.00	50	0	0	5.00	150	0	4	22.50
Titus	"				280	101	0	21.00	280	52	10	30.50	200	17	17	16.00	100	22	16	10.00
State Forester's	2010 (2)	0	0	15.00	Not inspected in 1933				186	0		2.50	100	0	0	13.00	50	0	0	5.00
E. W. Jones	Not Inspected				186	0	0	5.00	186	0		12.50	12800(3)	0	1368	126.02	9700	0	59	86.96
Totals				\$15.00	852	101	0	\$36.00	1,038	52	257	\$65.50	13500	17	1411	\$195.02	10575	22	79	\$142.71

- (1) 200 of these bushes were gooseberry seedlings escaped from cultivation
- (2) Includes mile Prot. Zone.
- (3) Includes mile Prot. Zone around 8 units of Jones Nursery

Distribution of Costs

1932		1933		1934		1935	1936	Total All Years
Federal	\$10.00	Federal	\$34.00	Federal	\$65.00	\$195.02	Federal \$142.71	\$447.23
State	5.00		0		0	0	0	5.00
Private			2.00		0	0	0	2.00
Total	\$15.00		\$36.00		\$65.00	\$195.02	\$142.71	\$454.23

VIRGINIA

Nursery Sanitation



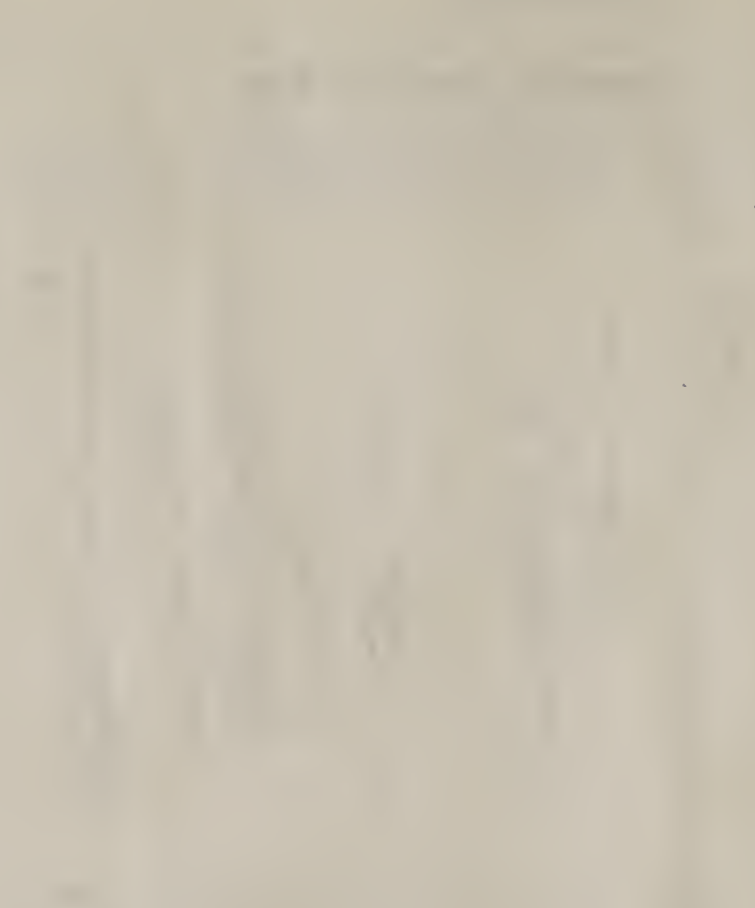
Ribes americanum

Wild Black Currants, *Ribes americanum* Growing Within 1500 Feet of White Pines In Nursery of Titus and Company at Waynesboro, Virginia.



Photos by J. G. Luce

Six Nurseries in Virginia that Grow White Pines Have Been Protected From the Blister Rust Through the Destruction of 192 Wild and 1,730 Cultivated Ribes on an area of 13,191 Acres since January 1, 1932



Portrait of a man, facing forward, with a high forehead and a serious expression. The drawing is very light and appears to be a preliminary study.



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Portrait of a man, facing forward, with a high forehead and a serious expression. The drawing is very light and appears to be a preliminary study.

NURSERY SANITATION IN WEST VIRGINIA

PARSONS NURSERY

UNITED STATES FOREST SERVICE (1)

Year	Acreage Examined	Bushes Destroyed	Man- Days Labor	Cost		Total
				Federal	State & County	
1928		22	1.0	\$30.00		\$30.00
1929	414	3,189	18.6	91.00	0	91.00
1930	352	404	7.2	30.25	0	30.25
1931	534	1,350	10.3	43.38	0	43.38
1932	549	2,631	13.2	46.75	40.00	86.75
1933	575	3,825	185.0	283.13	10.00	293.13
1934	575	3,256	189.0*	567.15	0	567.15
1935	333	736	114.0	450.70	0	450.70
1936	615	4,061	134.1**	686.00	0	686.00
Maximum	615	Tot. 19,474	672.4	\$2,228.36	\$50.00	\$2,278.36

* Includes inspection for 8 days.

** " supervision of 6.5 days.

(1) In 1936, 460,000 white pines were being grown in this nursery.

LESAGE NURSERY

WEST VIRGINIA

STATE FOREST SERVICE (2)

Year	Acreage Examined	Bushes Destroyed	Man- Days Labor	Cost		Total
				Federal	State	
1932	2,010 (3)	4	2.5	\$12.50	\$4.00	\$16.00
1933 - 35	Not Inspected					
1936	165	"				
	165	4	2.5	\$12.50	\$4.00	\$16.00

(2) 274,000 white pines are being grown in this State Nursery.

(3) Includes zone for 1 mile around nursery for R. nigrum.

Lecture 10: The Central Limit Theorem

Let X_1, X_2, \dots, X_n be independent and identically distributed random variables with mean μ and variance σ^2 .

n	μ	σ^2	μ_n	σ_n^2	σ_n	σ_n/σ
1	0	1	0	1	1	1
2	0	1	0	0.5	0.707	0.707
3	0	1	0	0.333	0.577	0.577
4	0	1	0	0.25	0.5	0.5
5	0	1	0	0.2	0.447	0.447
10	0	1	0	0.1	0.316	0.316
20	0	1	0	0.05	0.224	0.224
50	0	1	0	0.02	0.141	0.141
100	0	1	0	0.01	0.1	0.1

As n increases, the distribution of the sample mean \bar{X}_n becomes more concentrated around the true mean μ . The standard deviation of \bar{X}_n is σ/\sqrt{n} .

n	$\mu_{\bar{X}_n}$	$\sigma_{\bar{X}_n}$	$\sigma_{\bar{X}_n}/\sigma$
1	0	1	1
2	0	0.707	0.707
3	0	0.577	0.577
4	0	0.5	0.5
5	0	0.447	0.447
10	0	0.316	0.316
20	0	0.224	0.224
50	0	0.141	0.141
100	0	0.1	0.1

The Central Limit Theorem states that for large n , the distribution of \bar{X}_n is approximately normal with mean μ and variance σ^2/n . This approximation is more accurate as n increases.

NURSERY SANITATION IN NORTH CAROLINA

Nurseryman as a whole have been willing to cooperate in anyway possible in the blister rust program. There are no Federal or State nurseries growing white pine for distribution, and few private nurseries grow white pine for sale in sections other than the immediate vicinity in which they are located. The Champion Fibre Company located at Canton, North Carolina have white pine planting stock. This firm uses a great deal of its planting stock to reforest its own lands. The Log Cabin Association at Sylva, North Carolina has been growing white pine planting stock for distribution to the public. This nursery's supply was exhausted in 1935 by extensive plantings on lands of the company and by the State Extension Forestry Department cooperating with private landowners. Mr. R. W. Graebor, State Extension Forester, says his department has been unable to get a sufficient quantity of white pine seedlings from nurseries in the state to supply the demand. Some seedlings have been secured from West Virginia, and there may have been other sources. A list of private plantings sponsored by the State Extension Forester is given in part C of this report.

There are 16 nurseries known to have white pine on their property. Of these 12 have white pines for sale either in large quantities or keep a small amount for sale as ornamentals. Of these 8 are known to have had Ribes on their property. Eradication work has been completed on all nursery properties except one, and it is believed that this place will be cleared of Ribes soon. This nursery owner does not have white pines for sale, but there is white pine on his property; and it is believed that he will allow his bushes to be destroyed at an early date. About 125 bushes have already been destroyed on his property and he requested that we leave 3 bushes full of red currants for his own use. The berries have been gathered, and we hope to destroy the bushes before another growing season.

Ribes have been eradicated on the properties of 8 nurseries, and 3,924 bushes were eradicated. Of these 3,515 were wild bushes. Approximately 1,000 acres have been worked on nursery property to protect about 10,000 white pine trees.

On nurseries already worked there will be very little or no reworking necessary. About 700 acres were reworked in 1936 on the Anthony Lake Nursery property at Pineola, N. C. in Avery County. Some checking for sprouts will probably be done by mop-up crews, and a re-interview will be made at the nursery having the 3 bushes of red currants. Unless there are other nurseries to be inspected in counties not yet worked, the nursery sanitation work in North Carolina is about complete.

THE HISTORY OF THE UNITED STATES

The first part of the history of the United States is the period from the discovery of the continent by Christopher Columbus in 1492 to the establishment of the first permanent English colony in 1607. This period is characterized by the exploration of the continent by various European powers, including Spain, France, and the Netherlands. The second part of the history is the period from 1607 to 1776, which is the period of the founding of the United States. This period is characterized by the establishment of the first permanent English colony in 1607, the signing of the Declaration of Independence in 1776, and the signing of the Constitution in 1787. The third part of the history is the period from 1776 to the present, which is the period of the development of the United States. This period is characterized by the growth of the United States from a small colony to a large nation, the signing of the Constitution in 1787, and the signing of the Declaration of Independence in 1776.

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NURSERY SANITATION IN NORTH CAROLINA
1934 to 1936

No. of Nurseries Worked	# No. of white pines in Nurseries	No. of Acres Worked	No. of Ribes Destroyed		No. 8 hour man-days	Federal Permits Required	COST <u>Rec'd.</u>
			Wild	Culti.			
4	2,000	20	0	396	6.00	0	0
2	5,000	710	3515	0	117.00	0	0
1	200	10	0	13	.50	0	0
1	2,515	190	0	0	10.00	0	0
8	9,715	930	3515	409	133.50		\$189.42

Included as Ribes Eradication in previous reports through mistake.

Annual Report 2000

Financial Performance				Operational Performance			Notes
Revenue	Profit	Assets	Liabilities	Production	Quality	Efficiency	
1000	500	2000	1000	1000	95%	80%	
1100	550	2100	1100	1100	96%	82%	
1200	600	2200	1200	1200	97%	85%	
1300	650	2300	1300	1300	98%	88%	
1400	700	2400	1400	1400	99%	90%	
1500	750	2500	1500	1500	100%	92%	
1600	800	2600	1600	1600	100%	95%	
1700	850	2700	1700	1700	100%	98%	
1800	900	2800	1800	1800	100%	100%	
1900	950	2900	1900	1900	100%	100%	
2000	1000	3000	2000	2000	100%	100%	

Report prepared by the Board of Directors on 31st December 2000

NURSERY SANITATION IN TENNESSEE

The State Forest Nursery in Bledsoe County was inspected in 1935, including 500 acres of control area. No Ribes were discovered.

Man-Days labor were 3.

Cost of Work \$5.44

REMARKS ON THE PROCEEDINGS

The first of the two questions which I have to ask you is whether you have any objection to the proposed amendments to the Bill? I have no objection to the proposed amendments to the Bill. I have no objection to the proposed amendments to the Bill. I have no objection to the proposed amendments to the Bill.

WHITE PINE SURVEYS

WHITE PINE PLANTATIONS

WHITE PINE SURVEYS

Surveys for white pine were carried on in 1936 in each of the six Southern Appalachian States in which control work was carried on viz; Georgia, Maryland, North Carolina, Tennessee, Virginia and West Virginia.

A summary by States for 1936 and for the period 1918 to 1936 inclusive is given earlier in this report in the Omnibus Statistical Tables III and III A.

Pine surveys are complete for the States of Kentucky, South Carolina and Maryland, with the exception in the last state of small plantations in the eastern portion of the State.

From May 1, 1934 our employees remained outside of federal lands, but in 1936, a beginning was made on federal lands by our Agents working with W. P. A. funds. In both the Smoky Mountain and Shenandoah National Park the surveys for pine have been completed, though it is possible because of increases in their areas that some future survey work will need to be done. This will be investigated in 1937 in both North Carolina and Tennessee.

Surveys for white pine in West Virginia are usually completed the winter preceding. Surveys in other States, however, while made also in winter have not covered sufficient area to keep ahead of the crews, hence these surveys are made at the same time as eradication.

In Tennessee, in Johnson and Morgan County, a beginning has been made in surveying from base lines, 8 or 9 miles apart, running east and west through the County, with strips made every 20 chains between two base lines. In each strip one of the par-

ty covers an area 10 chains wide on each side of the north and south line. Pine areas are mapped in on a sketch map according to 6 classifications of pine, ranging from very dense to very scattered, the two lowest classifications being under 5%. It is believed this system of survey (which is the same the F. S. uses in type mapping) in mountainous countries like eastern Tennessee where pine boundaries are not distinct, but there they extend for miles along the mountain ranges will find more pine and will show where the different densities occur, than the system formerly in use of locating a pine area, then running a traverse around it tying it in with some distant known base.

In Tennessee considerable work needs to be done in those counties where work was conducted in 1934 and 1935, when the lower limit for survey was 10% pine, and no area less than 10 acres. A large acreage of pine will probably be found in these counties already partially worked. In Counties now being surveyed (June 1937) even scattered pine is being mapped and recorded.

In Georgia and Tennessee the actual pine acreage was not given in tables since data had not been assembled. Estimates of pine areas for all states have been made.

The following Table shows pine areas which have been protected through 1936. These pine areas are noted on U. S. G. S. Quadrangle maps in the State Leader's or Agent's offices.

SUMMARY OF WHITE PINE AREAS PROTECTED
FROM BLISTER RUST INITIALLY
BY OWNERSHIP OF LANDS, IN ACRES

TABLE 1

		National Forests	National Park	Total Fed. Lands	Private and State	Total White Pine Acres
Delaware	1932	0	0	0	8	8
Georgia	1933	7422	0	7422	739	8161
	1934	2214	0	2214	42240	44454
	1935	?	0		?	57699
	1936	?	0		?	27000 ⁽¹⁾
Total		9636	0	?	?	137314
(1) Estimated on basis of 1 to 4 the same ratio as in 1935 Resurveys being made may change this figure.						
Kentucky	1934	0	0	0	26372	26372
Total		0	0	0	26372	26372
Maryland	1932	0	0	0	537	537
	1933	0	0	0	190	190
	1934	0	0	0	60380	60380
	1935	0	0	0	6403	6403
	1936		100 ⁽¹⁾	100 ⁽¹⁾	4396	4496
Total			(1) A. R. A. Lands	100	71906	72006

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106	106	106	106	106	106
107	107	107	107	107	107
108	108	108	108	108	108
109	109	109	109	109	109
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114	114	114	114	114	114
115	115	115	115	115	115
116	116	116	116	116	116
117	117	117	117	117	117
118	118	118	118	118	118
119	119	119	119	119	119
120	120	120	120	120	120

NORTH CAROLINA

Pine Stand of Young White Pine that have sprung up Naturally From Seed Trees, in Harpers Creek Vicinity, Henderson County, N. C.



N. C. Photo No. 329, by Roy G. Pierce

512,537 Acres of White Pine Have Been Initially Protected Through the Eradication of 514,608 Wild Ribes and 549,256 Cultivated Ribes since January 1, 1933.

100

100

100

100

	Nat'l Forest	Nat'l Park	Total Fed.	Private and State	Total
North Carolina					
1933	14876	2010	16886	0	16886
1934	8801	0	8801	158520	167321
1935	0	0	0	261174	261174
1936	0	0	0	67156	67156
Total	23677	2010	25,687	486,850	512,537
South Carolina					
1933	425	0	425	463	888
1934	1375	0	1375	4027	5402
1935	0	0	0	7562	7562
Total	1800	0	1800	12052	13852
Tennessee					
1933	4107	1825	5932	0	5932
1934	5936	0	5936	22567	28503
1935	0	0	0	6157	6157
1936	108*		108	12700*	12808*
Total	10151	1825	11,976	41,424	53,400

* Estimated on basis of 1 to 8, the same ratio as in 1935

Resurveys being made will likely increase this pine acreage.

Section 1					
Item	Description	Quantity	Unit	Price	Total
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100

Virginia	Nat'l Forests	Nat'l Park	Total Fed. Lands	Private and State	Total White Pine Areas
1929	420	0	420	0	420
1930	530	0	530	0	530
1931	500	0	500	0	500
1932	402	0	402	545	947
1933	1619	2742	4361	869	5230
1934	1486	2309	3795	18119	21914
1935	3169	3475	6644	18124	24768
1936	91	507	598	29400	29998

Total	8217	9033	17250	67057	84307
-------	------	------	-------	-------	-------

West Virginia

1932	30	0	30	29	59
1933	175	0	175	1018	1193
1934	212	0	212	5328	5540
1935	928	0	928	11254	12182
1936	8597	0	8597	22556	31153

Total	9942		9942	40185	50127
-------	------	--	------	-------	-------

Station	Water	Wind	Direction	Force	Remarks
101	100	10	10	10	100
102	100	10	10	10	100
103	100	10	10	10	100
104	100	10	10	10	100
105	100	10	10	10	100
106	100	10	10	10	100
107	100	10	10	10	100
108	100	10	10	10	100
109	100	10	10	10	100
110	100	10	10	10	100

Station	Water	Wind	Direction	Force	Remarks
---------	-------	------	-----------	-------	---------

Station	Water	Wind	Direction	Force	Remarks
111	100	10	10	10	100
112	100	10	10	10	100
113	100	10	10	10	100
114	100	10	10	10	100
115	100	10	10	10	100

Station	Water	Wind	Direction	Force	Remarks
---------	-------	------	-----------	-------	---------

VIRGINIA
ACREAGE OF WHITE PINE
(MOSTLY OVER 5%)
IN STATE OR PRIVATE OWNERSHIP
AS OF AUGUST 15, 1937

C O U N T Y	M A P P E D					E S T I M A T E D			
	Acres White Pine Area	Acres (Q) Control Area	Acres W. Pine With Ribes	Acres Control Area With Ribes	No. Area With Ribes	Acres White Pine Area	Acres (Q) Control Area	Acres W. Pine With Ribes	Acres Control Area With Ribes
Albemarle	693	4101	232	1405	8				
Allegheny	1447	4120	1433	3970	6				
Amherst	262	2379							
Augusta	2109	10563	1544	6547	31	500	1500		
Bath	2572	7721	2519	7401	18	200	400		
Bedford	12	130				3000	6000		
Bland	3652	6312	2260	6435	16	100	300		
Botetourt	1906	5221	100	600	1				
Carroll	15359	72792	4996	23901	98	200	400		
Clarke	24	460	7	150	2				
Craig	184	1755	50	370	3				
Fauquier	27	647	14	274	3				
Floyd	1488	9486	746	4063	22	100	250		
Franklin	10592	31267	3696	8497	9	3000	6000		
Fredrick						3000	6000		
Giles	3816	9056	3746	8566	7	200	400		
Grayson	17057	58790	8383	28836	102				
Greene	592	4497	264	2074	13	3000	7000		
Henry	4380	7532	475	1305	3				
Highland	2412	13795	2164	11631	54				
Loudoun	4	323	4	323	4				
Madison	3538	15961	1853	6355	22				
Montgomery	1784	7003				2000	4000		
Nelson	66	980	13	170	1	100	300		
Page	5765	35272	2439	12602	57				
Pulaski	2042	8110	1080	3720	2	500	1000		
Rappahannock	8317	26868	5277	15055	28	200	400		
Roanoke	2465	8945				1000	3500		
Rockbridge	1586	5760	373	2595	11	200	400		
Rockingham	4975	21106	3486	13646	45	200	400		
Scott	460	2038	230	1073	4				
Shenandoah	2150	8511	2055	8051	14	2000	4000		
Smyth	5530	20376	1712	6087	18	3000	6000		
Tazewell	4	76	4	76	1				
Warren	879	5280	301	2040	13				
Washington	24770	67859	20490	50238	59				
West	11	165	5	80	1				
Wythe	6	191				10000	30000		
	132936	485448	71946	238206	676	32500	77250	10000	25000
Estimated Unmapped	32500	77250	10000	25000	100				
GRAND TOTALS	165436	562698	81946	263206	776				

(Q) - Acres Control includes Pine.
Footnote: Ownership is of the date mapped

38 Counties -

25 Counties

Respectfully submitted,

J. G. Luce, Jr.

State Leader

Master Rust Control

RECEIVED

U.S. DEPARTMENT OF AGRICULTURE
PLANT DISEASE CONTROL
WASHINGTON, D.C.



No.	Name of Plant	No.	Name of Plant
1	Apple	1	Apple
2	Banana	2	Banana
3	Cashew	3	Cashew
4	Citrus	4	Citrus
5	Cotton	5	Cotton
6	Cucumber	6	Cucumber
7	Eggplant	7	Eggplant
8	Grape	8	Grape
9	Guava	9	Guava
10	Jackfruit	10	Jackfruit
11	Lemon	11	Lemon
12	Lime	12	Lime
13	Mango	13	Mango
14	Orange	14	Orange
15	Pineapple	15	Pineapple
16	Potato	16	Potato
17	Rice	17	Rice
18	Sweet Potato	18	Sweet Potato
19	Tapioca	19	Tapioca
20	Watermelon	20	Watermelon
21	Yam	21	Yam
22	Avocado	22	Avocado
23	Coconut	23	Coconut
24	Fig	24	Fig
25	Grapefruit	25	Grapefruit
26	Kumquat	26	Kumquat
27	Lychee	27	Lychee
28	Mangosteen	28	Mangosteen
29	Passion Fruit	29	Passion Fruit
30	Peach	30	Peach
31	Pear	31	Pear
32	Plum	32	Plum
33	Quince	33	Quince
34	Shaddock	34	Shaddock
35	Starfruit	35	Starfruit
36	Tangerine	36	Tangerine
37	Ugli Fruit	37	Ugli Fruit
38	Walnut	38	Walnut
39	White Grape	39	White Grape
40	Yellow Grape	40	Yellow Grape
41	Zucchini	41	Zucchini
42	Artichoke	42	Artichoke
43	Brussels Sprouts	43	Brussels Sprouts
44	Cauliflower	44	Cauliflower
45	Broccoli	45	Broccoli
46	Asparagus	46	Asparagus
47	Bean	47	Bean
48	Peas	48	Peas
49	Carrot	49	Carrot
50	Spinach	50	Spinach
51	Kale	51	Kale
52	Chard	52	Chard
53	Turnip	53	Turnip
54	Beet	54	Beet
55	Radish	55	Radish
56	Cabbage	56	Cabbage
57	Onion	57	Onion
58	Garlic	58	Garlic
59	Shallot	59	Shallot
60	Leek	60	Leek
61	Scallion	61	Scallion
62	Chive	62	Chive
63	Herb	63	Herb
64	Flower	64	Flower
65	Vegetable	65	Vegetable
66	Fruit	66	Fruit
67	Seed	67	Seed
68	Root	68	Root
69	Stem	69	Stem
70	Leaf	70	Leaf
71	Bark	71	Bark
72	Wood	72	Wood
73	Grass	73	Grass
74	Shrub	74	Shrub
75	Tree	75	Tree
76	Plant	76	Plant
77	Animal	77	Animal
78	Human	78	Human
79	Mineral	79	Mineral
80	Chemical	80	Chemical
81	Physical	81	Physical
82	Biological	82	Biological
83	Geological	83	Geological
84	Astronomical	84	Astronomical
85	Mathematical	85	Mathematical
86	Statistical	86	Statistical
87	Historical	87	Historical
88	Philosophical	88	Philosophical
89	Religious	89	Religious
90	Political	90	Political
91	Economic	91	Economic
92	Social	92	Social
93	Legal	93	Legal
94	Medical	94	Medical
95	Psychological	95	Psychological
96	Physiological	96	Physiological
97	Botanical	97	Botanical
98	Zoological	98	Zoological
99	Entomological	99	Entomological
100	Microbiological	100	Microbiological

WHITE PINE PLANTING RECORDS

1936 Records From U. S. Forest Service

Southern Appalachian States

Secured thro' courtesy of
Miss Meynes of Forest Service
February 7, 1937

Sowing and Planting Data

P. strobus Plantations

Fiscal Year 1936

Kentucky

Cumberland National Forest	No. White Pine	Fiscal Year 1936
----------------------------	----------------	---------------------

Virginia

George Washington Nat'l Forest	"	"	"	"
Jefferson National Forest	"	"	"	"

West Virginia

George Washington Nat'l Forest	"	"	"	"
Monongahela National Forest	"	"	"	"

Georgia

Cherokee National Forest	"	"	"	"
Nantahala	"	"	"	"

North Carolina

Fiscal Year 1936

Nantahala Nat'l For.	20.2 Acres	- 644 trees per Acre
		Cost per A \$12.32
Pisgah National For.	63.4 Acres	754 trees per Acre
		@ \$12.38 per A

Tennessee

Fiscal Year 1936

Pisgah National For.	7 Acres	600 trees per Acre
		Cost \$9.22 per A.

Unaka National Forest	94 Acres	817 trees per A
		Cost \$13.99 per A.

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NATIONAL FOREST PLANTATIONS

FISCAL YEAR 1935

Kentucky

0

Virginia

George Washington Nat'l For. strob ^{39 Acres} 340 trees per A
Cost Per Acre \$17.10

West Virginia

0

Georgia

Nantahala National Forest 26.2 Acres e 1210 trees Per A
P strob and Lirioden- Cost \$22.17 per A
dron mixture

North Carolina

Nantahala
* Species not mentioned 32.4 A 1201 trees per Acre
Cost \$32.38 per acre

Tennessee

Unaka P strob and Liriodendron mixture 173 Acres
659 trees per acre
Cost \$13.37 per Acre

Unaka P strob only 335 Acres 488 trees per A
Cost \$10.44 Per A.

Virginia

Unaka P strob and Liriodendron mixture 9.6 Acres
781 trees per Acre.
Cost \$20.45 per A.
" B strob 27.2 A 520 trees per A. Cost \$15.71 A

* These may not include white pine, but in same year in Nantahala white pine and tulip poplar were planted in Georgia.

1871-1872

1873-1874

1875-1876

1877-1878

1879-1880

1881-1882

1883-1884

1885-1886

1887-1888

1889-1890

1891-1892

1893-1894

1895-1896

1897-1898

1899-1900

1901-1902

1903-1904

1905-1906

NATIONAL FOREST PLANTATIONS

FISCAL YEAR 1934

Virginia

George Washington Nat'l Forest P strobus 37.37 A
515 trees per A. Cost \$7.86 per A

Georgia

0

North Carolina

Pisgah National Forest P strobus 22.2 Acres
635 trees per A. Cost 7.16 per A

Pisgah National Forest (P strobus) 154.8 Acres
(mixture R.resinosa) 661 trees per A
Cost \$7.08 per A

Tennessee

Unaka National Forest P strobus 341 Acres
639 trees per acre, Cost \$11.48 per A

Pisgah Nat'l Forest P strobus 24.9 Acres
" 659 trees per A. Cost \$8.76 per A.

mixture(strobus 5.3 A. 755 trees per A
(resinosa Cost \$7.75 per A.

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NATIONAL FOREST PLANTATIONS

FISCAL YEAR 1933

Virginia

George Washington National Forest

121.0 Acres

P strobus and P resinosa
mixture

473 trees per A.
Cost \$10.43 per A.

West Virginia

Monongahela National Forest

9.8 Acres

P strobus

903 trees per acre
Cost @ \$7.00 per acre

Monongahela National Forest

1.60 Acres

P strobus and Larix
leptolepis mixture

1870 trees per acre
Cost \$14.37

Strob

us and Larix
Europea

17.00 acres
1076 trees per acre
Cost \$6.59 per acre

Liriodendron
tulipifera
P. strobus

18.60 trees on Acre
1194 trees per Acre
Cost \$7.50 per Acre

FISCAL YEAR 1932

Tennessee

Unaka P. strobus

Acres	Trees Per A.	Cost per A.
84.50	627	\$11.47

Virginia

George Washington National Forest

41.50	698	\$15.29
-------	-----	---------

North Carolina

Pisgah National Forest

P. strobus.
L. tulipifera
Rhamnus purshiana

49.00	837	\$6.22
-------	-----	--------

Tennessee

Unaka National Forest

7.00	828	\$16.70
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P. strobus
Liriodendron tulipifera

P. strobus
L. tulipifera

4.40	850	\$11.54
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P. strobus
Castanea dentata

1.60	750	\$11.53
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FISCAL YEAR 1932

(Continued)

Virginia

Natural Bridge	Acres	Trees per A.	Cost per A
P. strobus			
L. tulipifera	37.81	856	\$11.88
Shenandoah now. G.W			
Castanea crenata	69.33	558	\$11.22
P. strobus			
Quercus borealis			
Robinia pseudacacia			
Total Acreage	295.14		

TOTAL AREA WHITE PINE PLANTATIONS
In Southern Appalachian States
Fiscal Years 1932 to 1936
Inclusive

Fiscal Years 1936	184.6 Acres
" " 1935	610.4 " *
" " 1934	585.57 " **
" " 1933	168.0 " ***
" " 1932	295.14 " ****
	<u>1843.71</u>

Note * 1935; 208.8 acres were mixed plantations of white pine and yellow poplar

** In 1934; 1601.1 acres were mixed plantations of white pine and Norway pine.

*** In 1933; 158.2 acres were mixed plantations of white pine and other species

**** In 1932; 169.14 acres were mixed plantations of white pine and other species.

THE LIFE OF

JOHN RUSKIN

CHAPTER I

JOHN RUSKIN was born on the 8th of January 1819, at the Rectory of Winton, near Exeter. His father, George Rusk, was a merchant, and his mother, Anne, was the daughter of a clergyman.

He was educated at Winton, and then at Exeter College, Oxford, where he took his degree of Bachelor of Arts in 1838. He then spent some time in Italy, and returned to England in 1841.

He was married in 1848 to Emily, daughter of a wealthy merchant.

He was a man of great energy and high principles, and his life was devoted to the service of his country.

Year	Age	Event
1819	0	Born
1838	19	Graduated B.A.
1841	22	Returned to England
1848	29	Married
1860	41	Published 'The Stones of Venice'
1870	51	Died

JOHN RUSKIN was a man of great energy and high principles, and his life was devoted to the service of his country.

He was a man of great energy and high principles, and his life was devoted to the service of his country. He was a man of great energy and high principles, and his life was devoted to the service of his country.

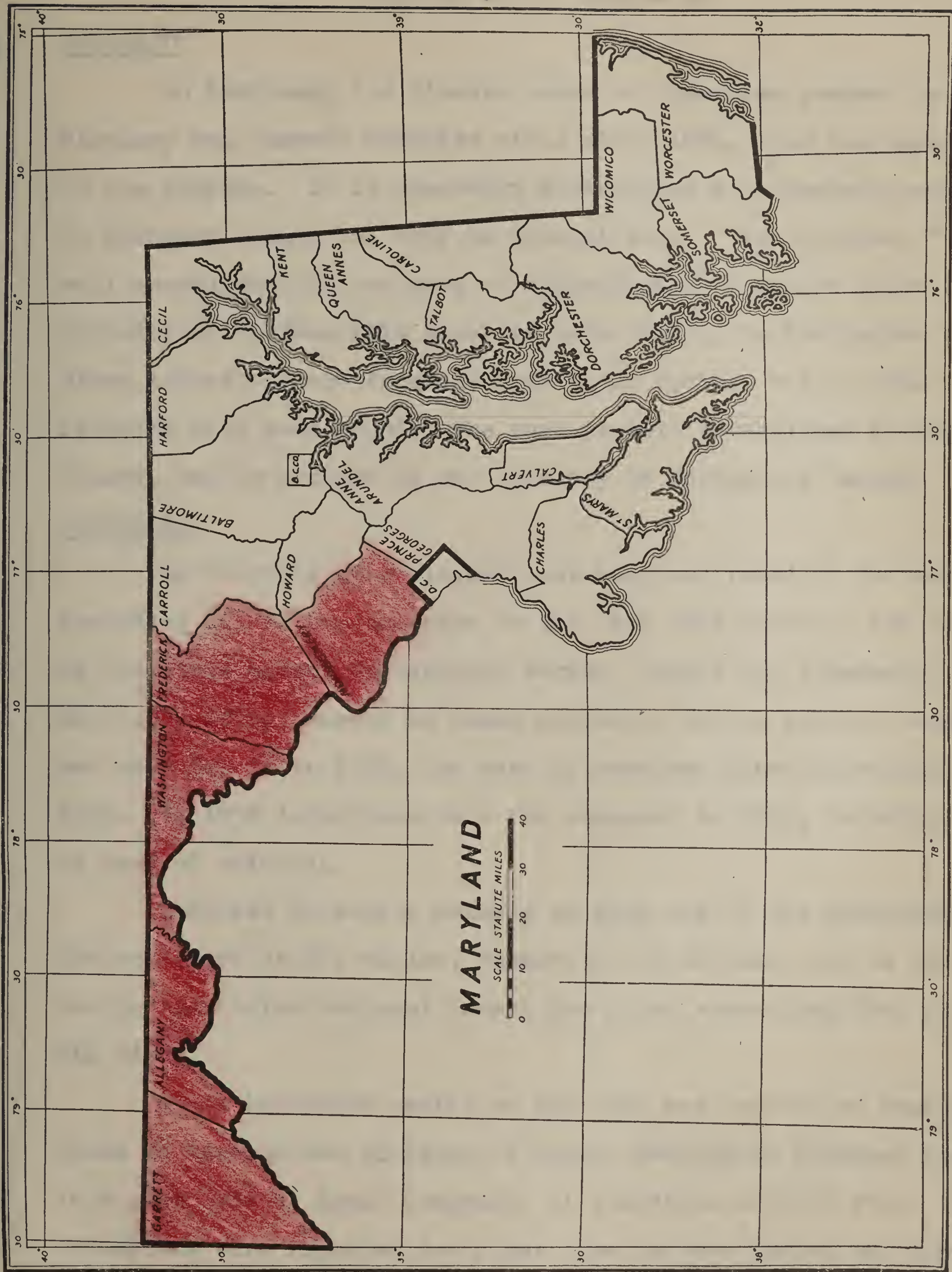
STATUS OF BLISTER RUST

TREATMENT OF INFECTED WHITE PINE

FIELD STUDIES

INFORMATIONAL ACTIVITIES

RECOMMENDATIONS



1927

Counties in which white pine blister rust (*Cronartium Ribicola*) has been found to Dec. 31, 1936

Map of the State of New York, showing the location of the State of New York, and the location of the State of New York, and the location of the State of New York.



BLISTER RUST - STATUS OF

MARYLAND

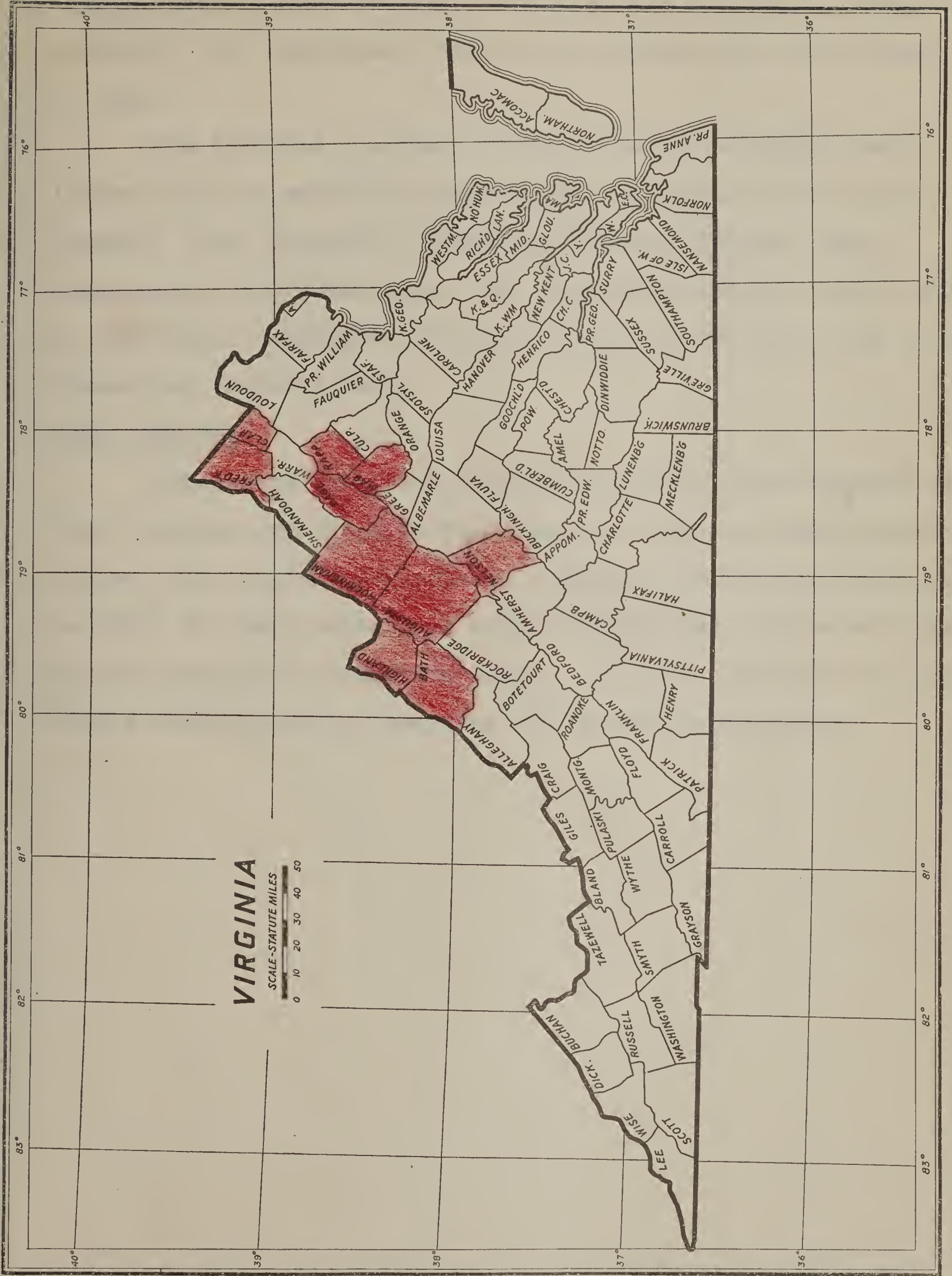
In Maryland, the disease seems to have been present in Allegany and Garrett Counties since about 1924, from the appearance of the cankers. It is generally distributed over Garrett county. In Allegany County the rust is intensifying. Yost reports, "It is well established in one area of approximately 2 square miles in the vicinity of Fifteen Mile Creek at Town Hill". In Washington County, Ribes infections are frequent near Clear Spring, but no pine infections have been found. The rust is well established in Frederick County, and is present in one locality in Montgomery County.

VIRGINIA

In Virginia, the blister rust has been found in ten counties including all of the counties in the pine belt north of the center of the state except Shenandoah, Warren, Greene and Albemarle. Undoubtedly it is present in those counties, but no special search was made for it in 1935, the year of heaviest Ribes infection or in 1936. In 1936 infections were few compared to 1935, probably due to lack of rainfall.

Heaviest infection centers on pine are in the Shenandoah National Park at Elk Wallow, Hawksbill and Skyland, and in the George Washington National Forest two miles above Camp Todd on Big River.

A new infection center on one pine was located on Passage Creek in Massanutten Division of George Washington National Forest in August 1936 by Agent Campbell, at elevation of 1500 feet. Ribes infections were reported for first time in Hone Quarry and Mines Run in Rockingham County and on Shaws Fork in Highland County by



July 1, 1919.

Counties in which white pine blister rust (*Cronartium Ribicola*) has been found to Dec. 31, 1936

Map of the State of New York, showing the location of the State of New York, and the location of the State of New York, and the location of the State of New York.



State of New York

Agent Cramer. (These are new localities for infection, rather than counties). No additional counties were found with infections in 1936.

The infected counties are ten in all, including Clarke (where rust was reported found on pine in 1910, but not since), Augusta, Bath, Frederick, Highland, Madison, Nelson, Page, Rappahannock and Rockingham. The rust dates back to about 1922 in the George Washington National Forest and to about 1926 in the Shenandoah National Park.

WEST VIRGINIA

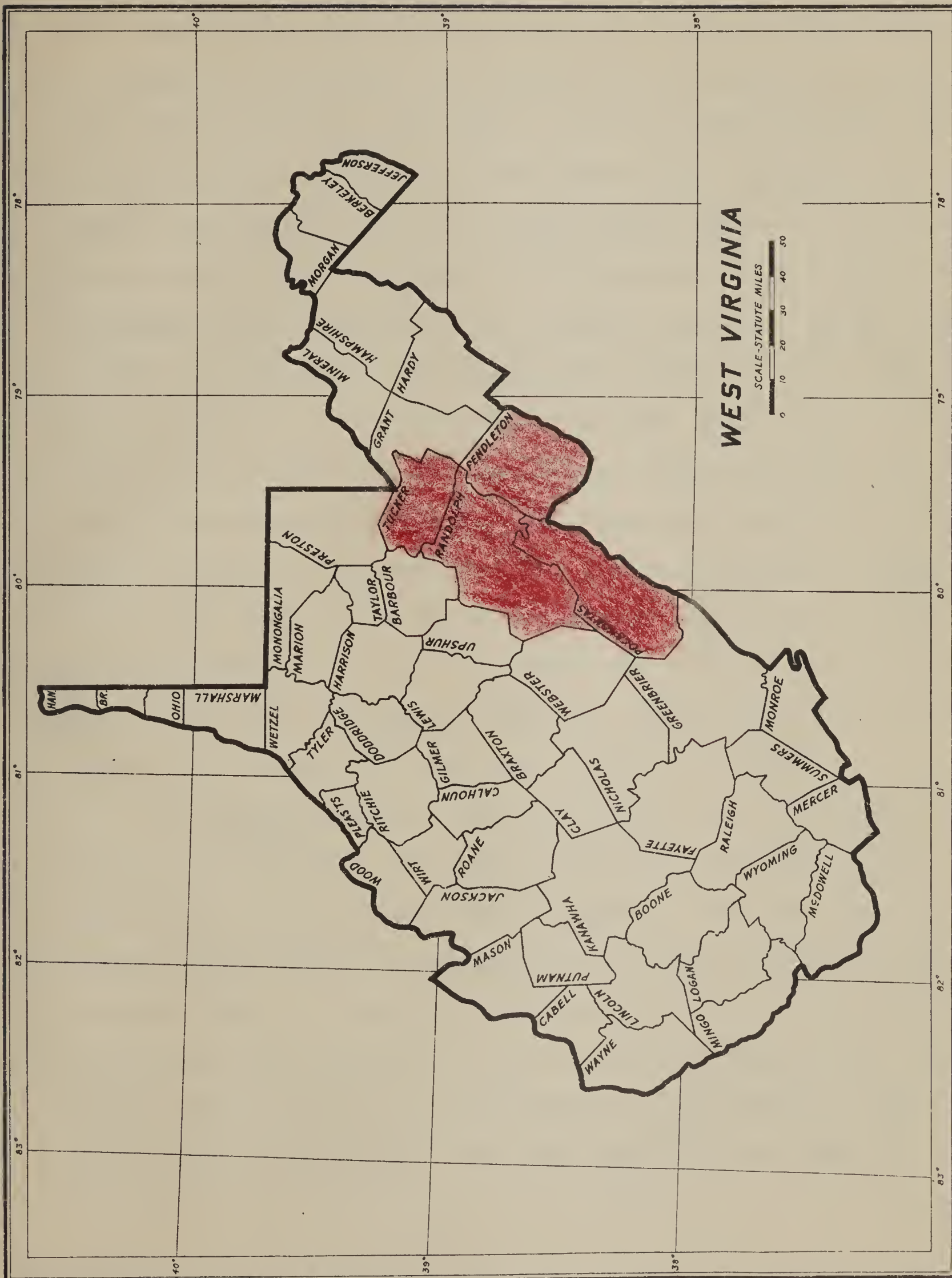
Infections have been reported from only four counties in West Virginia; on Ribes in Pendleton, Pocahontas, Randolph and Tucker, and on pine in Pendleton County. The rust was very scarce in 1936, the only infections found being on two cultivated bushes in one locality in Pendleton County. In 1935 the rust was very widely distributed in Pendleton and Pocahontas counties.

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WEST VIRGINIA

SCALE-STATUTE MILES
0 10 20 30 40 50

Counties in which white pine blister rust (*Cronartium Ribicola*) has been found to Dec. 31, 1936



TREATMENT OF INFECTED WHITE PINE

Two States, Maryland and Virginia carried on this type of blister rust control. In Virginia the treatment of infected white pine which began in 1935 in the Shenandoah National Park was continued in 1936. The Park authorities conducted this pruning and salvage operation along Skyline Drive at various points viz; at Skyland Resort in the central section and at Elkwallow picnic grounds in the northern section. In the Park a total of 3,151 white pine trees were examined, 1005 trees were treated, 122 dead or dying trees were removed and 5,622 cankers were removed at an expenditure of 209 man-days labor and $15\frac{1}{2}$ man-days supervision. The trees were mostly under 30 feet in height. The cost for CCC labor was \$334.40 or \$1.60 per day for each of the 209 CCC man-days. The cost of supervision was \$76.29 for the $15\frac{1}{2}$ days. The total of the sanitation work in the Park amounted to \$410.56. Since there were 90 acres treated the average cost per acre amounted to \$4.56.

In Maryland similar work was carried on at Bittering in a fine tract of white pine, which has been purchased by the Agricultural Resettlement Administration. This area was one of the first infected in Maryland, the infection dating back to about 1924. A total of 2,878 white pine trees were examined, 1,355 trees were treated, 14 dead trees were removed and 6,071 cankers were removed at an expenditure of 83 man-days labor and two days supervision. The cost for labor was \$228.03.

THEORY OF THE EARTH

The classical method of determining the shape of the Earth is by measuring the length of a meridian arc. This method is based on the fact that the Earth is not a perfect sphere, but an oblate spheroid. The measurement of a meridian arc is done by measuring the distance between two points on the same meridian, and then dividing this distance by the number of degrees of longitude between the two points. This gives the length of one degree of longitude, which can then be multiplied by the number of degrees of longitude in a circle (360) to give the circumference of the Earth. This method is very accurate, but it is very laborious and expensive. A more modern method is to use satellite measurements. This method is much more accurate and less expensive, but it is also more complex and requires a lot of data. The most accurate method is to use a combination of both methods. This method is called the "geoid" method, and it is the most accurate method of determining the shape of the Earth. The geoid is a mathematical model of the Earth's shape, which is based on the Earth's gravity field. The geoid is a smooth surface, which represents the mean sea level. The geoid is used to determine the shape of the Earth, and it is also used to determine the Earth's mass and density. The geoid is a very important concept in geophysics, and it is used in many different applications. The geoid is a very complex surface, and it is not possible to measure it directly. However, it is possible to measure the Earth's gravity field, and this can be used to determine the geoid. The geoid is a very important concept in geophysics, and it is used in many different applications. The geoid is a very complex surface, and it is not possible to measure it directly. However, it is possible to measure the Earth's gravity field, and this can be used to determine the geoid. The geoid is a very important concept in geophysics, and it is used in many different applications.

THE FOLLOWING TABLE SHOWS THE RESULTS OF THE TREATMENT OF INFECTED PINES 1936 AND IN PREVIOUS YEARS

1936 State	No. of trees Examined	No. of trees treated	No. of dead and dying trees Removed	No. of blister rust cankers Removed	No. of Man-Days Labor	Super- vision
Md.	2,878	1,355	14 (2)	6,071	83	2
Va.	3,151	1,005	122	5,622	209	15.5
Total	6,029	2,360	136	11,693	292	17.5
1935						
Va.	14,755	1,795	277	9,296	207 ⁽¹⁾	88
GRAND TOTAL VA	17,906	2,800	399	14,918	416	103.5
GRAND TOTAL BOTH STATES	20,784	4,155	413	20,989	499	105.5

(1) In Annual Report 1935 Man-Days work referred to Labor and Supervision

(2) Average height of trees removed in both areas 4 feet.

Percent of trees Examined found in- fected, including both dead trees and others			Percent of trees found with infection which were dead and Removed		Average No. of Cankers Removed Per Tree Treated	
	1936	1935	1936	1935	1936	1935
Maryland	47.6	0	1.0	-	4.4	-
Virginia	35.7	14.0	10.8	13.3	5.5	5.2
Average No. of Trees Treated Per Man-Days Labor			Average No. of Trees Examined Per Man-Days Labor			
	1936	1935	1936	1935	1936	1935
Maryland	16.3	-	34.6	0		
Virginia	4.8	6.1	15.0		71.2	

Cost Data on Treatment of Infected White Pine

State	Total Cost Including Labor and Supervision	Cost of Labor	Cost of Super- vision	Acreage Covered	Total Cost Per Acre For Labor and Super.	Cost per A. for Labor	Cost Per Acre for Supervision
Maryland 1936	248.47	228.03	20.48	30	8.26	7.60	.66
Virginia 1936	410.69	334.40	76.29	90	4.56	3.71	.85
Md. & Va. 1936	659.16	562.43	96.73	120	5.49	4.68	.81
Virginia 1935	619.64	332.40	287.24	194	3.19	1.71	1.48
Total Cost Va. '35-36	1030.33	666.80	363.53	284	3.62	2.34	1.28
Total Cost Va. '35-36 Md. '35-36	1278.80	894.83	383.97	314	4.06	2.84	1.22

FIELD STUDIES

MARYLAND

Field studies have been started on the Swallow Falls State Forest near Oakland in Garrett County along the Oakland-Cranesville Road. Three acres have been divided into tenth-acre plots for the purpose of determining intensification of the rust. These are marked with stakes. No Ribes have been eradicated and the pines were practically all diseased. Twenty five one acre plots have been marked with paint on this State Forest to study the effectiveness of dormant eradication on skunk currants and wild gooseberries.

Fifty Viking currants have been distributed throughout the State as test plants.

OTHER STATES

No field studies are being made in other States except the laying out of Ribes ecology plots for the study of the come-back of Ribes.

INFORMATIONAL ACTIVITIES IN 1936

Activity	Georgia	Mary- land	North Carolina	Tenn- essee	Vir- ginia	West Virginia	Totals
Meetings	15 ⁽¹⁾	1	34		11		61
Attendance	181	50	547		531		1309
Items Pub.		12	9	5	5		31
Dem. Placed			52			1	53
Init'l Intew.	2587	387	6532	2196	1425	384	13511
Follow-up Calls	228	250	1350	334	55	90	2307
Indiv. Instructed		110	1930	2467	1448	240	6195
No. Pubs. Distributed	3278	254	4595	1596	1856	160	8461
Posters placed	48	6	54	13	90	13	224
Demonstrations							
Informational talks to schools and teachers	16						16
No. Owners Interviewed			13292				
No. Owners having Ribes			2778				
No. Owners allowing bushes to be pulled			2152				
No. Owners refusing to allow bushes to be pulled			517				

(1) Mr. Zimmer and his Agents showed the film strip on 14 different occasions.

Table showing the results of the experiment

Experiment No.	Time (min)	Temperature (°C)	Pressure (mm Hg)	Volume (ml)	Weight (g)	Remarks
1	10	20	760	100	1.00	Normal
2	15	25	750	110	1.10	Normal
3	20	30	740	120	1.20	Normal
4	25	35	730	130	1.30	Normal
5	30	40	720	140	1.40	Normal
6	35	45	710	150	1.50	Normal
7	40	50	700	160	1.60	Normal
8	45	55	690	170	1.70	Normal
9	50	60	680	180	1.80	Normal
10	55	65	670	190	1.90	Normal
11	60	70	660	200	2.00	Normal
12	65	75	650	210	2.10	Normal
13	70	80	640	220	2.20	Normal
14	75	85	630	230	2.30	Normal
15	80	90	620	240	2.40	Normal
16	85	95	610	250	2.50	Normal
17	90	100	600	260	2.60	Normal
18	95	105	590	270	2.70	Normal
19	100	110	580	280	2.80	Normal
20	105	115	570	290	2.90	Normal
21	110	120	560	300	3.00	Normal
22	115	125	550	310	3.10	Normal
23	120	130	540	320	3.20	Normal
24	125	135	530	330	3.30	Normal
25	130	140	520	340	3.40	Normal
26	135	145	510	350	3.50	Normal
27	140	150	500	360	3.60	Normal
28	145	155	490	370	3.70	Normal
29	150	160	480	380	3.80	Normal
30	155	165	470	390	3.90	Normal
31	160	170	460	400	4.00	Normal
32	165	175	450	410	4.10	Normal
33	170	180	440	420	4.20	Normal
34	175	185	430	430	4.30	Normal
35	180	190	420	440	4.40	Normal
36	185	195	410	450	4.50	Normal
37	190	200	400	460	4.60	Normal
38	195	205	390	470	4.70	Normal
39	200	210	380	480	4.80	Normal
40	205	215	370	490	4.90	Normal
41	210	220	360	500	5.00	Normal
42	215	225	350	510	5.10	Normal
43	220	230	340	520	5.20	Normal
44	225	235	330	530	5.30	Normal
45	230	240	320	540	5.40	Normal
46	235	245	310	550	5.50	Normal
47	240	250	300	560	5.60	Normal
48	245	255	290	570	5.70	Normal
49	250	260	280	580	5.80	Normal
50	255	265	270	590	5.90	Normal
51	260	270	260	600	6.00	Normal
52	265	275	250	610	6.10	Normal
53	270	280	240	620	6.20	Normal
54	275	285	230	630	6.30	Normal
55	280	290	220	640	6.40	Normal
56	285	295	210	650	6.50	Normal
57	290	300	200	660	6.60	Normal
58	295	305	190	670	6.70	Normal
59	300	310	180	680	6.80	Normal
60	305	315	170	690	6.90	Normal
61	310	320	160	700	7.00	Normal
62	315	325	150	710	7.10	Normal
63	320	330	140	720	7.20	Normal
64	325	335	130	730	7.30	Normal
65	330	340	120	740	7.40	Normal
66	335	345	110	750	7.50	Normal
67	340	350	100	760	7.60	Normal
68	345	355	90	770	7.70	Normal
69	350	360	80	780	7.80	Normal
70	355	365	70	790	7.90	Normal
71	360	370	60	800	8.00	Normal
72	365	375	50	810	8.10	Normal
73	370	380	40	820	8.20	Normal
74	375	385	30	830	8.30	Normal
75	380	390	20	840	8.40	Normal
76	385	395	10	850	8.50	Normal
77	390	400	0	860	8.60	Normal
78	395	405	0	870	8.70	Normal
79	400	410	0	880	8.80	Normal
80	405	415	0	890	8.90	Normal
81	410	420	0	900	9.00	Normal
82	415	425	0	910	9.10	Normal
83	420	430	0	920	9.20	Normal
84	425	435	0	930	9.30	Normal
85	430	440	0	940	9.40	Normal
86	435	445	0	950	9.50	Normal
87	440	450	0	960	9.60	Normal
88	445	455	0	970	9.70	Normal
89	450	460	0	980	9.80	Normal
90	455	465	0	990	9.90	Normal
91	460	470	0	1000	10.00	Normal
92	465	475	0	1010	10.10	Normal
93	470	480	0	1020	10.20	Normal
94	475	485	0	1030	10.30	Normal
95	480	490	0	1040	10.40	Normal
96	485	495	0	1050	10.50	Normal
97	490	500	0	1060	10.60	Normal
98	495	505	0	1070	10.70	Normal
99	500	510	0	1080	10.80	Normal
100	505	515	0	1090	10.90	Normal

Notes: The above table shows the results of the experiment. The temperature, pressure, volume, weight, and remarks are recorded for each experiment. The normal range is indicated for each experiment.

RECOMMENDATIONS

It is recommended that the work be continued in 1937 and 1938 on as large a scale as possible, until all pine areas have been located in the Southern Appalachian States, and until the first working has been given such areas. In the three infected States of Maryland, Virginia and West Virginia, it is recommended that the States provide a larger share of the expense than they have in the past, and that federal funds be allocated to these States prior to those in which no infection has been located, if said federal funds are insufficient for work to be carried on in all six of the states now being worked namely, Georgia, Maryland, North Carolina, Tennessee, Virginia and West Virginia.

It is recommended that in all States where National Forests or National Parks be located that the cooperative work be carried on as in the past and that our Agents work on National lands as well as on State and private lands, using either E. C. W. labor or W. P. A. labor as best suited to the locality. Cooperation should be continued with such organizations as the Soil Conservation Service and Agricultural Resettlement Administration and other federal and State organizations. Every effort should be made to get each of the states to participate in financing the work and to get more cooperation from interested pine owners.

It is recommended that in case there be no emergency funds available on July 1, 1937, and in case that the regular funds made available by Congress for work in the South be insufficient to carry on work on a large scale in each of the six Southern States that the headquarters of the District be moved back to Washington because of the expense of maintenance of the Richmond office,

and because there will be no need of a large office force at that point.

It is recommended that those State Leaders whose States provide funds and services of \$2500. or more during the next fiscal year, be placed upon regular rolls, and not on emergency funds.

Respectfully submitted

Roy G. Pierce
Roy G. Pierce
Pathologist

June 15, 1937.

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Report of

General John C. Fremont, U. S. Army, Major General, 1846

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John C. Fremont
General, U. S. Army

and

John W. Fremont
Major, U. S. Army

Report of

BLISTER RUST CONTROL IN THE NORTH CENTRAL REGION, 1936

by

Henry N. Putnam
Senior Pathologist

and

Fred F. Franklin
Associate Pathologist

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AI-A55 - Studies in Effectiveness of Control Measures.

General Summary

The first attempts to guard the North Central Region white pine against blister rust were made by treating early nursery stock shipments from Europe and western United States and destroying them at the various locations where they had been planted. In 1918 and 1917 it was found that the infection had escaped from the imported nursery stock and was present in native stands at scattered points in the Region. State and Federal authorities cooperated in locating the rust and in destroying pine stands where infection was found. By 1920 it was realized that the disease could not be eliminated, but could be controlled by the removal of Ribes bushes for a distance of 500 feet — cultivated black currants for one mile from each white pine stand.

Minnesota, Wisconsin and Michigan with varying degrees of intensity waged educational campaigns from 1920 until 1933 to secure the cooperation of pine owners in destroying all Ribes bushes within infesting ranges of their pine stands. In 1931 the North Central Region was organized with headquarters at Milwaukee. During 1932 the cooperative work was continued in the three above named states and extended to include Illinois. In many localities, particularly in Upper Michigan and Northern Wisconsin, local relief agencies contributed man power which was used for local control purposes.

In 1933 the control program was extended to include Iowa, Indiana and Ohio and greatly augmented by the inauguration of the various NOW and ERA programs. The NOW program was continued from its inception through the present calendar year and the ERA program ceased June 30, 1935. In August, 1935, the Emergency Relief Act provided the major portion of funds for control measures from that date through the present calendar year. This program is known as the Works Progress Administration (WPA) program.

During the eradication season of 1936 a total of 57,141,800 Ribes bushes were removed from 294,630 acres of land in protecting 173,557 acres of white pine and white pine planting sites. This work was accomplished through the expenditure of 180,239 man days at a total cost of \$629,536.72. In general, far more was accomplished in 1936 than in any previous year. By December 31, 1936, approximately 34.2% of the 1,043,813 acres of white pine worth protecting had been initially worked, and 4.1% had been worked twice. In addition incentive was given to the systematic removal of cultivated black currant bushes in the Region. In Michigan, Wisconsin and Minnesota the initial cultivated black currant elimination program was completed in the more important white pine-growing regions. Backwork was started in these states and initial eradication work continued in Ohio and Iowa. In the five states during 1936 approximately 1,169,947 inspections were made for cultivated black currant bushes and a total of 86,923 bushes was destroyed. State-wide destruction of cultivated black currant bushes is the key to preventing long-range jumps of the disease into uninfested areas and ultimate establishment of the disease throughout the state.

STATUS OF SILVER PINE CONTROL PROGRAM AS OF DECEMBER 31, 1958

ILLINOIS

Silver Pine Conditions

None of *Pinus nigra* found in 1958 at Murren, in DeWitt County, northeastern Illinois, is only location reported.

White Pine

Not intensively checked. Largest planting is on Governor Land's estate near Oregon, Illinois, where 800,000 white pines have been planted within the past 10 years and are making excellent growth. There are four major native stands all in state parks and valued highly for their aesthetic value.

Current Local Control

Acres white pine worth protecting	1,195
Acres white pine given initial working	271
Acres white pine given second working	360
Per cent white pine given initial working	85

Survey Activities

Illinois not yet classified as an infested state, and hence Federal white pine shipping permits not required at present time. Survey activities, however, has been performed around the state survey at Ottawa, Illinois. Several private nurseries have been contacted and have expressed a desire to grow white pines under Liber-type conditions.

Cultivated Black Current Eradication

Due to the low number of white pine acres, no systematic cultivated black current campaign has been done. Instead, these bushes have been searched out and their destruction urged within one mile of white pine growing territories and areas of white pine protected.

Plans for Future Work

Complete initial protection to all white pine stands worth protecting. Complete all successive eradication work to bring all acres of white pine to a state of maintenance. In cooperation with nurseries provide Liber-free areas around white pine growing nurseries. Look for the next year to determine spread.

Status of Blister Rust Control Program on December 31, 1938

Iowa

Blister Rust Distribution

Extensively distributed infection has been found in food-louse Galls widely separated from each to west in the northern part. As a result, the state has been considered as an infected state for a number of years.

White Pine

Although white pine exists in five or six major native stands in the state, the chief importance of white pine is its use in shelterbelts. The value of these stands can be realized by considering that farmers are sacrificing from 1-3 acres of \$100 - \$200 per acre land just to grow white pine shelterbelts. There are eight thousand of these shelterbelts now in the state.

Status of Local Control

Lower white pine worth protecting (mainly shelterbelts)	3,867
Lower white pine given initial working	1,037
For some white pine given initial working	89.6

Nursery Sanitation

Four commercial nurseries yearly perform sanitation work under the supervision of S. E. supervisory personnel supplied them. Starting in 1916 the S.O.S. nursery at Ames also performed this sanitation work. Federal white pine shipping permits were issued for nurseries in 1935.

Cultivated Black Currant Eradication

A systematic U.S.O. eradication program was launched in 1934 for the first time in the northeastern corner of the state. To December 31, 1938, a total of 1,792 cultivated black currant bushes have been destroyed from 222 properties. The work in the northeast quarter of the state is about 80% completed.

Plans for Future Work

Local control should continue in the northeastern quarter of the state until all pine spruce and shelterbelts are placed on a minimum basis. Sanitation of the nurseries desiring to ship stock interstate should be continued until they are permanently sanitary - needing only a yearly checking.



1. The Hawaiian Islands are shown in the
upper left corner of the map. The
Hawaiian Islands are shown in the
upper left corner of the map.



1. The Hawaiian Islands are shown in the
upper left corner of the map. The
Hawaiian Islands are shown in the
upper left corner of the map.

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
WASHINGTON, D. C.
1911

Status of Blister Rust Control Program on December 31, 1944

Minnesota

Blister Rust Conditions

Blister rust infection on Bitter has been found in highly-susceptible varieties in northeastern Minnesota. Infection on pine has been found in twenty-four of those varieties. Some of the oldest infection centers in the North Central Region are located in Minnesota. Killing cankers have been found on white pine branches measuring 2" - 10" in diameter.

White Pine

Commercially, white pine has been the most important forest tree in Minnesota. It is so valuable that it was almost entirely cut out during the timber boom days, but during the last 25 years has been coming back in encouraging amounts. The state and U.S. Forest Service are planting it extensively for reforestation purposes.

Status Local Control

Acres white pine worth protecting	807,461
Acres white pine given initial working	89,727
Acres white pine given second working	9,000
Acres white pine given initial working	97,24

Nursery Sanitation

States white pine prominent nurseries in Minnesota, of which four are private, three are state and four are Federal, have been protected against Blister Rust. Federal white pine shipping permits were issued to five of those nurseries in 1935. In addition to this protection against spreading of infection through distribution of infected white pine nursery stock, the state has established control areas into which the movement of Bitter lumber is controlled.

Cultivated Black Current Eradication

Minnesota, in 1934, undertook to eliminate all C.B.C. bushes growing within the Federal and State Forests of the state. In 1935 the program was extended to the white pine growing varieties of the state and to date 22,000 C.B.C. bushes have been destroyed from 1,461 locations. Except for some recheck work that is necessary, the work in the state has been completed.

Plans for Future Work

Roads being built by various RCF programs are opening up pine stands in the Arrowhead Country that have been heretofore almost inaccessible. These many stands must receive initial control work and the work already done carried forward until the pine stands can be placed on a maintenance basis.



Status of Blister Rust Control Program on December 31, 1936

Ohio

Blister Rust Conditions

Infection on white pine has been noted in five northeastern Ohio counties. In six other counties infection has been noted on Sibes. This section of the state has been heavily populated with cultivated black currant bushes and through them the rust has become established.

White Pine

White Pine is planted very extensively in Ohio as a forest tree and for ornamental purposes. It is growing exceptionally well where there are sheltered seed trees. The State Forestry department has supplied more than 1,000,000 white pine trees for reforestation purposes in the last five years.

Status of local Control

Acres of white pine worth protecting	1,000
Acres of white pine given initial working	2,120
Per cent white pine given initial working	19.25

Nursery Sanitation

Northeastern Ohio is one of the big nursery centers of the country. Thirteen nurseries of which four are private, two are state, and one is Federal are annually performing Sibes eradication under trained supervision. Eight of these nurseries received Federal white pine shipping permits in 1936.

Cultivated Black Currant Eradication

For two years a systematic program of D.R.C. elimination has been conducted under the State and Federal WPA program. This work has been confined to a block of counties in the northeastern portion of the state and to certain violations at other points in the state where white pine has been extensively planted. This work has resulted in removal of 55,073 cultivated black currant bushes from 6,177 locations.

Plans for Future Work

Within two or three years the areas given initial control work should be reworked and as soon as possible placed on a maintenance basis. Control work should keep abreast the planting program.

Status of Blister Rust Control Program as December 31, 1954

Wisconsin

Blister Rust Conditions

With the exception of three counties, infection on white pine has been found in all of the counties in the northern half of the state. During the last three years several serious infection areas have been found, notably in Portage, Douglas and Shawano Counties. As many as 60 per cent of the trees skinned in these areas have been found to be infected.

White Pine

White pine is regenerating very well throughout the northern half of the state. Given adequate protection from rust and fire, it will again become the most important commercial tree in the state. Wisconsin is a great summer resort state and much of its aesthetic attraction is due to the white pine fringed lakes and streams.

Status of Control

Acres white pine worth protecting	327,000
Acres white pine given initial working	187,720
Acres white pine given skinned	18,300
Per cent white pine given initial protection	46.25

Nursery Limitation

Twelve nurseries in Wisconsin, four of which are private, four state and four Federal, have performed Ribes eradication around white pine growing portions under supervision of Blister Rust Control personnel. Four of these nurseries ship immature and have required Federal white pine shipping permits.

Cultivated Black Currant Eradication

The general eradication of O.E.D. bushes in the Wisconsin pine-growing counties was started in 1944. To date 29,718 bushes have been destroyed from 4,000 locations in this initial program. The initial work in the white pine-growing counties is nearly completed. The results of this work will be to remove materially the instances of long distance spread and establishment of the race.

Plans for Future Work

A potentially profitable investment has been made in giving initial protection to more than half of the 327,000 acres of valuable white pine in the state. The work must be continued until all now existing potential stands are protected and are on a maintenance basis. Nursery limitation work should continue and a system for O.E.D. bushes should be made.

There is quoted in full following the Memorandum of Understanding used in Wisconsin. While this memorandum was slightly modified to meet different conditions in other states, the general principles involved applied to all states:

"MEMORANDUM OF AGREEMENT
BETWEEN
THE BUREAU OF ENTOMOLOGY AND PLANT QUARANTINE
UNITED STATES DEPARTMENT OF AGRICULTURE AND THE
WISCONSIN DEPARTMENT OF AGRICULTURE & MARKETS
CONCERNING
COOPERATIVE WORK IN CONTROLLING
WHITE PINE BLISTER RUST IN WISCONSIN

- - - - -

"The white pine blister rust is a disease of foreign origin which gained entrance into North America from Europe about 85 years ago. It is now present in 14 states and in several provinces of Canada. The disease is fatal to the white pines, which in this country have a stumpage value of more than \$400,000,000, and are of high importance to the economic welfare of many communities engaged in the logging, limbing, and milling industries. Pine areas in the infested regions can be protected against the rust by the eradication and suppression of the alternate hosts (currants and gooseberries, collectively called Ribes) from within and near the pine stands. These plants must be removed from the pine-producing areas in the country promptly to prevent serious losses in existing white pine timber and to permit natural restocking of these areas with white pine to form the next crop. The disease kills the young trees so rapidly that natural restocking of pine areas is impossible unless the Ribes are removed and kept suppressed on these areas. There are about 15,000,000 acres of land bearing white pines of commercial importance from which the Ribes must be eradicated. This acreage must then be kept free of Ribes growth to assure the continued production of white pine. On account of the extensive areas involved and the necessity of reexamining parts of these areas periodically to keep the Ribes suppressed by removing any that have developed from seed or sprouts, it is recognized that this work will have to be continued systematically over a period of several years to establish and maintain control of the disease in the important white pine areas of the country. The cost of control work is economically feasible when compared with the value of the crop protected, and the wide interest in and the usefulness and great value of the white pines as forest, timber, watershed, and ornamental trees, justify the participation of the Federal and State governments in the control of this destructive disease wherever the pine values are great.

"The Bureau of Entomology and Plant Quarantine is concerned with the control and prevention of the spread of white

417 To furnish the services of a responsible state employee whose duties shall include general charge of the cooperative program and supervision of the cooperative movement in all matters connected with carrying out any State laws and Statutes with respect to either public control in Wisconsin.

- "(2) To cooperate with counties, townships, associations, and individuals in the local eradication of blight.
- "(3) To provide such immediate supervision and checking of local eradication of blight as will maintain a standard of police eradication satisfactory to the Bureau of Entomology and Plant Quarantine, U.S. Department of Agriculture, and to do for as practicable to utilize the facilities of its organization for furthering the cooperative work.
- "(4) To undertake directly or in cooperation with such State agencies as may have jurisdiction, such destruction of white pine and spruce in Wisconsin and such enforcement of State laws as may be necessary for the effective preservation of blight-free control work, including regulations of the interstate movement of blight-free bare plants.
- "(4) To furnish the necessary office space and facilities for the direction of the cooperative work at State Headquarters.

"B. The Bureau of Entomology and Plant Quarantine Agrees:

- "(1) To furnish the services of a chief field leader who shall devote his entire time to the coordination and prosecution of the control activities of the cooperating agencies in accordance with working plans mutually agreed upon by the responsible representatives of the agencies concerned.
- "(2) To furnish the services of such assistant field leaders as may be agreed upon from time to time in accordance with the needs of the work and the availability of funds.
- "(3) To provide these and any other cooperative employees with subject matter and technical information essential to the proper conduct of their work in controlling and preventing the spread of blight rust.
- "(4) To enforce Federal Regulations on the interstate movement of blight-free bare plants.

"C. It is Mutually Agreed:

- "(1) That detailed plans for the cooperative work shall be drawn up in advance of the season's work and approved by the properly constituted representatives of each cooperating agency.

- "(2) That persons employed by the cooperating agencies under this memorandum and assigned to similar past work in this State will devote their entire time to such work except as modified by mutual agreement.
- "(3) That all persons employed within the State on this work by the U.S. Department of Agriculture, Bureau of Entomology and Plant Quarantine and by its cooperators under this memorandum shall be satisfactory to the cooperating parties, subject to the requirements of such Civil Service regulations as may be applicable.
- "(4) That such periodical reports as may be required and mutually agreed upon shall be furnished by either or both cooperating agencies.
- "(5) That the results of the cooperative work may be published jointly or, upon mutual agreement, by either cooperating party, with due credit given to the cooperating agencies, provided that the manuscripts shall be submitted in advance to the cooperating parties and provided further, that either agency shall be free to use the results obtained by these cooperative undertakings in official correspondence and in their regular reports, giving appropriate credit to the other agency.
- "(6) That all press letters, bulletins, and any other circular matter to be mailed in postally envelopes shall be submitted in manuscript form for approval by the U.S. Department of Agriculture, Bureau of Entomology and Plant Quarantine, before being printed or sent out.
- "(7) That accounts for these cooperative activities shall be divided in a manner that may from time to time be mutually agreed upon. Provided, that no Federal funds shall be expended in compensation for lost plants destroyed.
- "(8) That expenditures in connection with this work by the Bureau of Entomology and Plant Quarantine will be in accordance with the Federal laws and the fiscal regulations of the U.S. Department of Agriculture, and the expenditures of the Wisconsin Department of Agriculture and Markets shall be in accordance with the State laws and fiscal regulations.

"(9) That the expenditures for these cooperative undertakings for the fiscal year July 1, 1936, to June 30, 1937, shall approximate for the Wisconsin Department of Agriculture and Markets \$_____ and for the funds regularly appropriated by the Federal government to the Bureau of Entomology and Plant Quarantine for white pine blister rust control \$_____. These amounts to include the cash value of services rendered.

"(10) That the expenditures under the direction of the Bureau of Entomology and Plant Quarantine will be increased by such additional amounts as may be allotted for this cooperative work from any special funds allotted to it for the control of white pine blister rust. The program of work under these special funds shall be agreed upon in correspondence between the cooperating parties.

"V. Ineligible Personnel: It is an express condition of this agreement that it shall not be assigned in whole or in part; that no member of or delegate to Congress or Resident Commissioner after his election or appointment, and either before or after he has qualified and during his continuance in office, and no officer, agent, or employee of the Government shall be admitted to any share or part of this contract or agreement, or to any benefit to arise hereupon; and that no convict labor shall be employed in carrying out any of the terms of this agreement in accordance with Executive Order signed May 18, 1906. The provisions herein with respect to the interest of members of or delegates to Congress and Resident Commissioners in this agreement shall not be construed to extend to any incorporated company where such contract or agreement is made for the general benefit of such incorporation or company. (Section 3741, Revised Statutes, and Sections 114-116 Act of March 4, 1909.)

SIGNED:

BUREAU OF ENTOMOLOGY AND PLANT QUARANTINE

Date: Oct. 3, 1936.

Per: /s/ Avery S. Hoyt
Chief of Bureau

WISCONSIN DEPARTMENT OF AGRICULTURE AND
MARKETS

Date: August 13, 1944.

Per: /s/ Charles L. Hill
Commissioner."

The State Cooperators signing this agreement in the different states were as follows:

- Illinois: Illinois Department of Agriculture.
The State Cooperator was Mr. H. F. Seibert, State
Nursery Inspector, Glen Ellyn, Ill.
- Indiana: State Forester of Indiana.
The State Cooperator was Mr. E. A. Woods, State Fore-
ster, Indianapolis, Ind.
- Iowa: Iowa Agricultural Experiment Station.
The State Cooperator was G. B. Macdonald, Professor of
Forestry at Iowa State College, Ames, Iowa.
- Michigan: Michigan State Department of Agriculture.
The State Cooperator and also State leader was Mr. E. G.
Macdonald, Inspector of Orchards and Nurseries, Lan-
sing, Mich.
- Minnesota: Minnesota Department of Conservation.
The State Cooperator was Mr. G. M. Jensen, State For-
ester, St. Paul, Minn.
- Ohio: Ohio Agricultural Experiment Station.
The State Cooperator was Mr. Edmund Seibert, State
Forester, Wooster, Ohio.
- Wisconsin: Wisconsin Department of Agriculture and Markets.
The State Cooperator was Mr. E. L. Chambers, State
Entomologist, Madison, Wis.

The destruction of host plants can only be done under state author-
ity. The agency in each state under whose authority host plants may be
destroyed are as follows:

- Illinois: Division of Plant Industry, Illinois State Department
of Agriculture.
- Indiana: State Entomologist.
- Iowa: State Entomologist.
- Michigan: Inspector of Orchards and Nurseries.
- Minnesota: Commissioner, Department of Conservation for areas
other than nurseries. For nurseries, the State En-
tomologist.
- Ohio: State Nursery Inspector.
- Wisconsin: State Entomologist.

Blister Rust Control Regulations

In four of the states in this section, namely, Michigan, Minnesota, Ohio and Wisconsin, blister rust control work is performed under special laws or regulations. In general these regulations cover the following points:

- (1) Cultivated bluish currants are declared a public nuisance and their destruction is authorized throughout the state, with or without compensation. In Ohio and Wisconsin no compensation is authorized. In Michigan and Minnesota the state may pay compensation, provided the bluish are infected with blister rust, and provided also that such money is available for that purpose. In effect, since no money is available for that purpose, no compensation is paid in any of the states.
- (2) Blister rust control areas are established. In those areas no bluish are allowed within 500 feet of protected pine areas or within 1000 feet of protected white pine nurseries.
- (3) In order to ship currants or gooseberries into a state having established control areas, it is necessary that a control area permit be issued by the responsible state agency. The responsible state agency must be informed as to the exact location where the bluish bushes are to be shipped, prior to the time of shipping. If the location is not within a protected area, a control area permit is issued.
- (4) White pine shipped entirely within a state must be produced and grown under bluish-free conditions for 1000 feet and cultivated bluish currants for a mile from the nursery. These requirements are similar to requirements of the Federal blister rust quarantine and are administered by the state authority.
- (5) In Michigan a fruiting currant control area is established where currants and gooseberries are grown commercially and within which white pine can be grown only on written permission from the Commissioner.

Agreement Between Soil Conservation Service and Forest of Experiment and Plant Quarantine

During 1933 extensive planting of white pine in connection with the soil conservation program was put back effect by the Soil Conservation Service. A memorandum of understanding was drawn up between the Soil Conservation Service and the Bureau of Entomology and Plant Quarantine relating to white pine blister rust control. This is quoted in full following:

MEMORANDUM OF UNDERSTANDING
BETWEEN
THE SOIL CONSERVATION SERVICE AND
THE BUREAU OF ENTOMOLOGY AND PLANT QUARANTINE
RELATIVE TO WHITE PINE BUDS AND BUDS CONTROL

The purpose of this memorandum is to define cooperative relations between the Bureau of Entomology and Plant Quarantine and the Soil Conservation Service, relative to white pine blister rust control.

The Bureau of Entomology and Plant Quarantine agrees:

"1. To inspect lands as available funds will permit, the site and systems of Soil Conservation Service nurseries, seed orchards and stock areas, where white pine is growing or is to be planted, and report on the feasibility of white pine blister rust control on these areas.

"2. To make plans for the conduct of such control operations as are mutually agreed upon as advisable and necessary, and to give technical assistance to the conduct of control operations under such plans.

"3. To coordinate this control work with the blister rust control program in the various States and arrange with the responsible State authorities for the necessary regulatory authority for carrying out the control operations under this Memorandum of Understanding with the abutting States.

The Soil Conservation Service agrees:

"1. To grow white pine only as specified provided against blister rust, and to plant only white pine stock grown from stock of seedling stock such protection.

"2. To designate the areas to be planted to white pine and to plant only such areas as are mutually agreed upon as satisfactory from the standpoint of protection against damage from blister rust.

"3. To cooperate with the Bureau of Entomology and Plant Quarantine and responsible State authorities in preventing such spread of white pine rust in addition to State and/or private control measures, as justify the work on the basis of blister rust or soil erosion control.

"4. To provide, insofar as funds are available, for the labor, transportation, supplies, and where necessary for the salary and expenses of such technical experts as are needed for these blister rust control jobs, provided the labor must be furnished by the Bureau of Entomology and Plant Quarantine and abutting State authorities.

"I. That, in addition to supplying labor for blisters not covered work around the Conservation Department nurseries which grow white pine, labor will be furnished from State E.O.W. camps to perform blisters eradication where such action is justified by existing circumstances as determined mutually by the State E.O.W. official in charge and the State Entomologist.

"J. That the Wisconsin Conservation Department and the Wisconsin Department of Agriculture and Markets will arrange for carrying out the work covered by this memorandum through their respective field organizations.

"K. That at the end of each calendar year an annual report listing control work accomplished in Wisconsin under the provisions of this Memorandum of Understanding will be furnished to the Director of the Wisconsin Conservation Department by the Wisconsin Department of Agriculture and Markets, and that the Director of the Wisconsin Conservation Department will furnish to the Commissioner of the Wisconsin Department of Agriculture and Markets an annual statement listing the land description of the trees planted to white pine, the areas proposed for planting, and any other data pertinent to this project.

"L. This memorandum is effective as of October 1, 1936, and will continue in effect until the 30th day of June, 1937, subject to renewal thereafter biennially upon mutual request (in writing) of the cooperating agencies on or before the 30th day of June of each odd year. Provided, that either agency may terminate this agreement within thirty days upon written notice to the other cooperating agency.

Date: _____ Signed _____
Director, Wisconsin Conservation
Department.

Date: _____ Signed _____
Commissioner, Wisconsin Department
of Agriculture and Markets.

Cooperating Agencies

During 1936 the general blister rust control program was conducted by contributions from several programs and agencies. Briefly, the contributions from each agency or program were as follows:

State Contribution:

State allotment. This includes actual cash from state sources, either as a direct appropriation or an allotment from an existing

Soil Conservation Service F.O.W.:

In the southern portions of Wisconsin, Wisconsin and Michigan and in various places in the four lower states, Soil Conservation F.O.W. Camps were established and a considerable amount of work going for Soil Conservation Service purposes was started. The various employees of men engaged in blaster pest control out of F.O.W. Camps around these plantings are included under this item.

Forest Service F.O.W.:

Chiefly in connection with nursery activities, a small amount of F.O.W. funds administered by the Forest Service was used in the employment of laborers performing nursery activities under the supervision of our own Bureau.

State F.O.W.:

In Ohio a relatively large scale of cultivated black nursery activities was performed as a State F.O.W. project. The work was under the technical supervision of the State Leader of Ohio. These funds were used in the employment of laborers, foremen and travel expenses necessary in this work. In Minnesota a small amount of State F.O.W. money was used chiefly in connection with office work.

Federal F.O.W.:

Approximately 75% of all blaster pest control funds used in 1935 was furnished through the Federal F.O.W. program. These funds were used for the employment of a limited amount of supervision, foremen and laborers, for necessary travel and other expenses. Wages were paid in accordance with prevailing authorized rates or under a special authorization by the State F.O.W. Administrator. The work done on these funds covered all blaster pest control activities, with the exception of Ohio, where no black nursery construction was performed on these funds. Further details of the F.O.W. program are given further on in this report.

Sanitation Administration:

In Michigan these funds were used in the employment of labor performing white pine stands under the jurisdiction of the Sanitation Administration.

N. I. A.:

These funds were used in Michigan, Minnesota and Wisconsin chiefly for the part-time employment of college students in making up lists of working men in the office. In Ohio, N.I.A. men were employed in search for cultivated black nursery houses in the vicinity of their villages.

Federal W.F.A. Program

General

The Emergency Relief Appropriation Act of 1935 allotted this Region funds (801089) in the amount of \$725,000, part of which was carried through and used during the first six months of 1936. A second Appropriation in July, 1936, allotted the Region funds (801086) in the amount of \$666,800, only a part of which was spent through the calendar year 1936. The actual amount of both these funds spent during 1936 was \$761,080.49, as seen in Table 22.

The Regional Leader at Milwaukee was continued as Project Manager and the funds for all the states were handled through the Milwaukee office and paid from the Treasury Accounts office at Madison, Wis. Budgets were prepared for each state's sub-allotments, such as appointees' salaries, non-relief salaries, relief salaries, travel, supplies and reserve. These budgets were still further divided to show the number of men to be employed monthly. At least 90% of all men months was required to be from relief rolls.

These funds were used for the employment of District Leaders, Supervisors, Foremen and relievers. In the Milwaukee office, as well as in the state offices, these funds were also used for the employment of clerks and stenographers. Wage rates used were those authorized by each State Administrator. In general the use of these Federal W.F.A. funds in winter past control work was very successful.

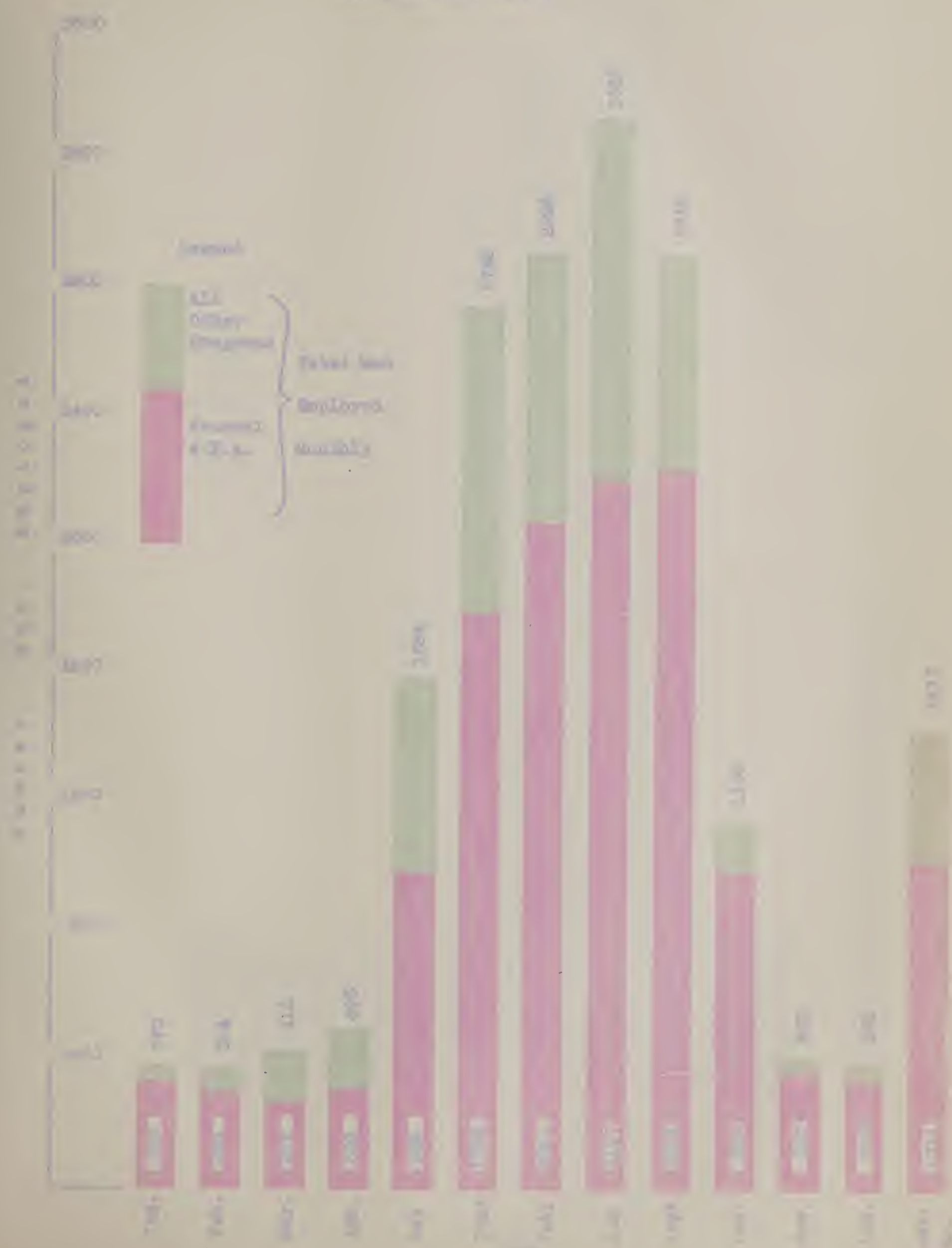
Number of Men Employed

In the accompanying chart there is shown the approximate number of men employed by months on the Federal W.F.A. program and on all other programs for the Region as a whole. The number of men shown under the W.F.A. program each month is to reflect the number of men months and was derived by dividing the total hours worked by the number of hours authorized monthly. The number of men employed on all other programs necessarily could not be arrived at so accurately and therefore are not quite on the same basis as the number of W.F.A. men shown as employed. However, it is believed that the figures given are sufficiently accurate to bring out the fact that the peak of W.F.A. employment came in September, when 2227 men were employed, although the peak of employment of all men came in August, when 3383 men were employed.

Inference is also made to the charts showing the number and percentages of Federal W.F.A. workers employed by positions monthly. Note that while the number of appointees remained fairly constant, the number of non-relief security wage earners fell off sharply in November and December. The number of relievers was fairly constant at about 500 men during the months of January, February, March, April, November and December. The peak months were June to September, inclusive, while the employment in May and October approximated the monthly average for the year.

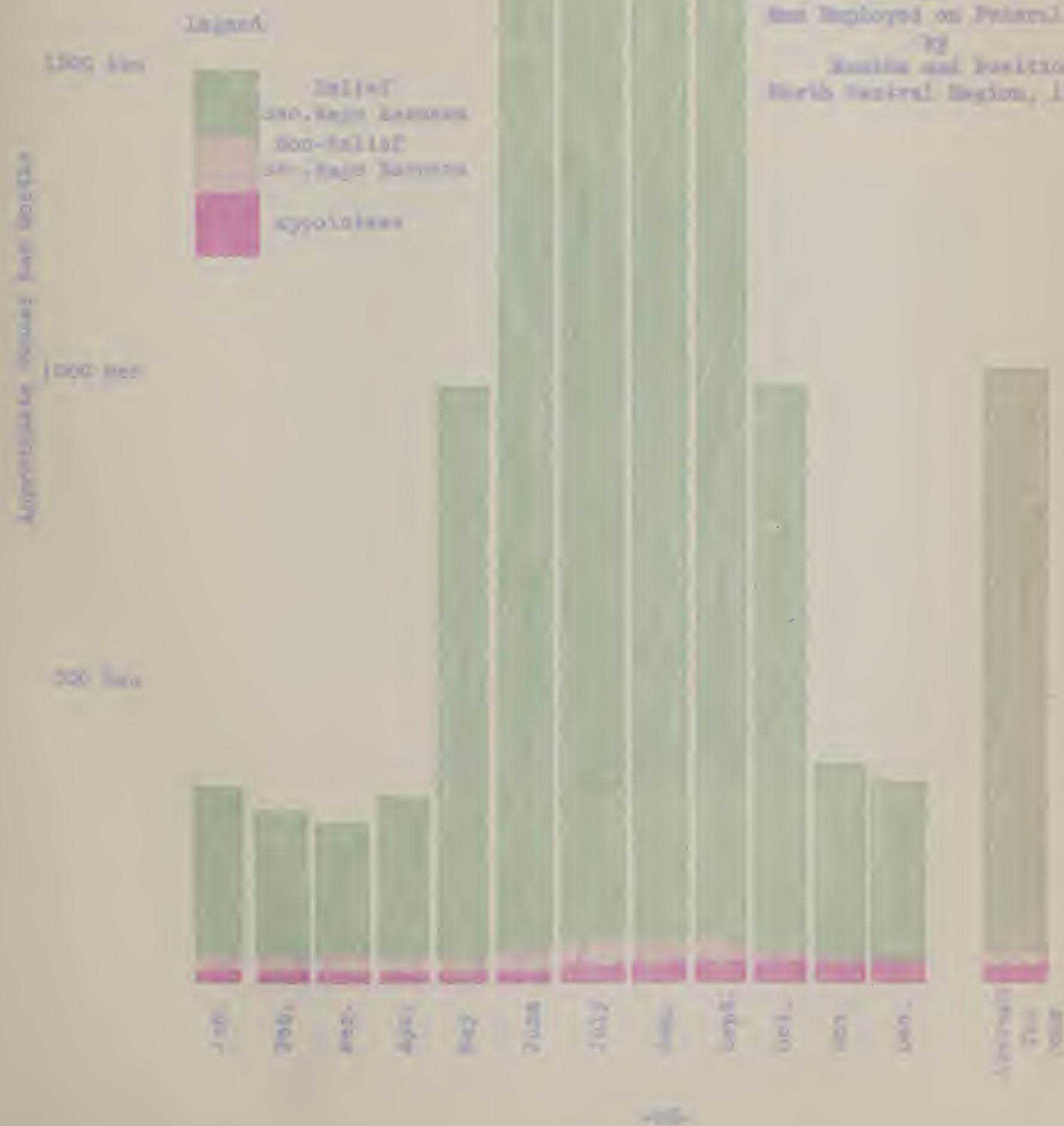
The percentage of non-relievers during the winter months averaged around 18%. However, during the summer months the average was

Distribution of the total number of persons, 1941
 by sex, race, and age group
 (Total population)

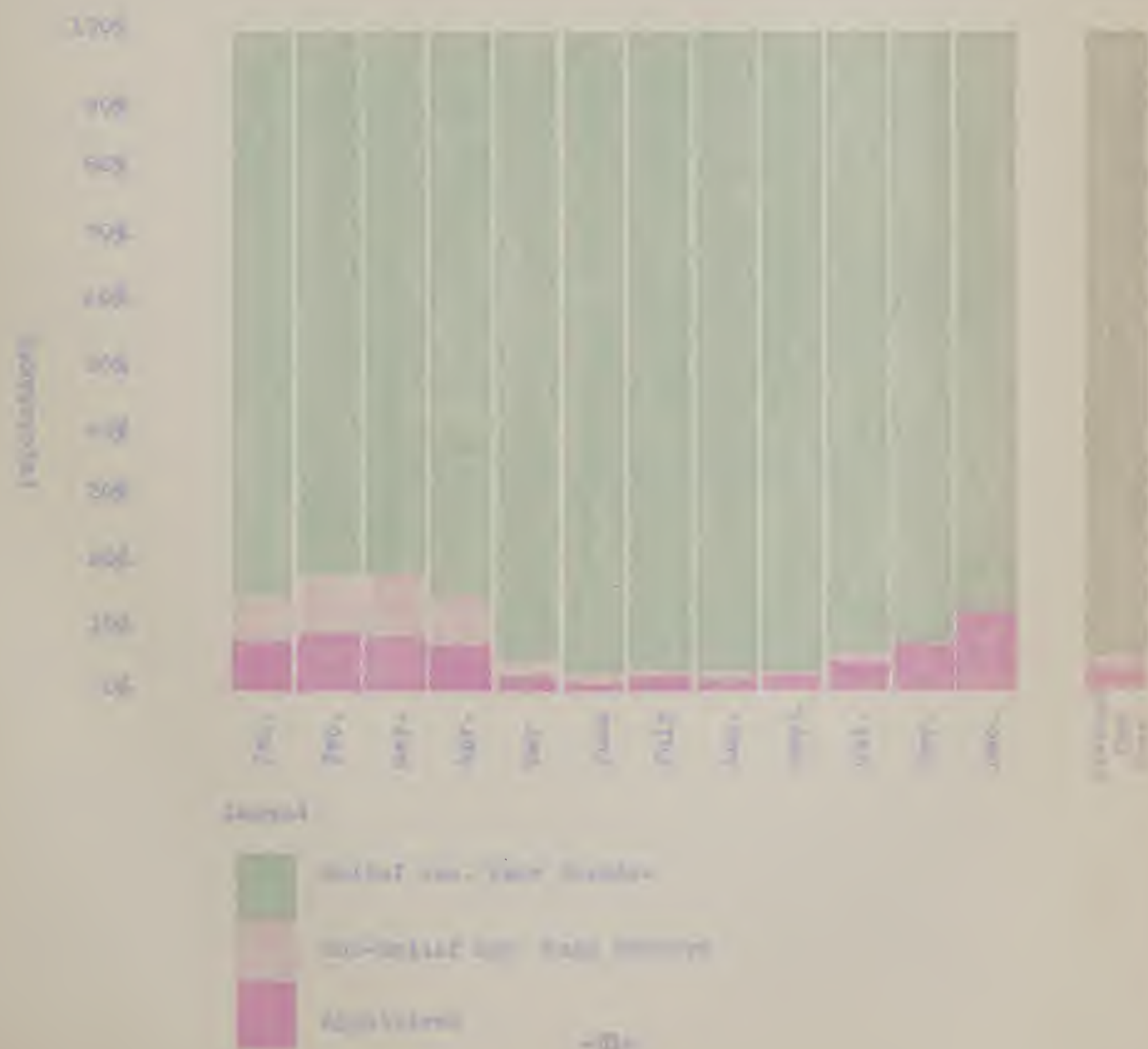


2000 men

Graph Showing Number
of
Men Employed on Federal Work
by
Season and Position
North Central Region, 1935



Drug Monitoring
 Monitoring of drug use and abuse in
 the United States
 - monthly and quarterly
 drug monitoring reports, 1990



well value \$5 or less for the entire year approximately 8% of the men would have value of reliefs.

Wage Rates Under W.F.A.

During the calendar year 1936, except after November 15, 1936 in Iowa, a state-wide rate was used in each state, determined by the highest rate in the state where control work was done. During 1936, however, except in Minnesota and Indiana the rates used conformed to those used in counties or districts, except as noted below, and were established by the respective State Administrators. In Minnesota and Indiana state-wide rates and minimum hours prevailed. The rates, hours used, and dates when the district rates replaced state-wide rates are shown in the accompanying table. No attempt has been made to show various shifts of rates or hours made by the State Administrators during the year. To do this would require several additional pages in the report.

Note that the number of hours allowed per month varied in the different states from 60 to 100, but that the maximum hours per month were uniform in each state except in Iowa and certain districts in Wisconsin.

In Wisconsin and Michigan, by authority of each State Administrator, the allowable minimum hours for certain classes were raised to 100 and 105 per month, respectively, and the men were paid on a monthly basis. The wages paid, however, were monthly wages, and the men were considered as carrying wage earners.

Attention is called to the table giving the actual men months, expenditures, and costs per man month under the two W.F.A. allotments (DDFORM and DDFORM) used during 1936. In general, DDFORM was used during the first half, and DDFORM the last half of the year. However, part of the unused balance of DDFORM remaining as June 30, 1936, was used in one way or another during the remainder of the year.

From the operating cost, \$5.10 per month, average, for the Region. In general, the larger the number of men months employed in a state, the smaller was the operating cost per man month.

W.F.A. Cooperation

Excellent cooperation was obtained from each State Administrator, and from the several District W.F.A. offices with reference to obtaining men suited to our work. In many instances well qualified men working on other projects were transferred to our project.

One of the difficult problems to solve was the matter of transporting workers to and from the jobs. Since the areas to be protected in this Region are scattered widely, with relatively only a few men days of labor at each place, the transportation problem was a big one. This difficulty was particularly pronounced in C.B.I. work and in making pre-scouting surveys. The problem was successfully solved in a number of ways. Government owned trucks were used in the work; they were available; personal car mileage for security men was authorized at \$0.15 per mile for each day per mile for a limited number

INDEX OF DEPORTED NAME DATES AND SPACES, (MILLIERS ONLY)
General Central Section, 1976

Date Change From State Side		Age	Occupational Title	Index of		Average Monthly	
County Name	County Name			County Name	County Name	County Name	County Name
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of sales per acre for white pine stands directly wage surveys show their own work as well as to the government. In this last case, often the owner shared the cost of protection.

The response of security men showed to our work was gratifying. At the outset it was made clear to them that white pine control was not merely a one-time work, but that they were doing a part of a long-term and continuing process of competitive control work, essential to the future life of white pine stands. Many of the security men were persons we had interviewed who had voluntarily worked many additional hours of their own time, particularly in the survey of checking their work, mapping, and conducting surveys of white pine.

Compensation Cases

There were 57 compensation cases reported in the Region in 1934. On the basis of 12,000.4 man months under the W.F.O. program, 1934 represents 7.13 cases per 1000 man months, as noted in the accompanying table. Strangely enough, the accident rate was apparently highest in the Milwaukee office. The number of man months used as a basis for these figures, however, is not sufficiently large to give reliable rates.

Cuts, sprains, thorns and bruises led to the most of injury. There was a relatively high percentage of accidents to the eye, with poison ivy accounting for 14 cases.

Spread of the Disease

Pine infection centers have rapidly increased throughout practically the entire white pine range in this Region during the past two years. Previous to 1930 infection centers were widely scattered, and in most cases could be traced directly to cultivated black currant bushes near the infected pine stands.

During the past four years great strides have been made in eliminating cultivated black currant bushes from white pine growing districts, but the struggle was not won until after widespread and long-range infection had occurred. Now, intense local infection is becoming rather general. This is especially true throughout the northern half of Wisconsin, northeastern quarter of Minnesota, Upper Peninsula of Michigan, and to a lesser extent the western portion of the Lower Peninsula of Michigan adjoining Lake Michigan. Several infection centers have been found in northeastern Ohio. In Iowa a few infection centers have been found, but in each instance the centers have all been destroyed and no centers were found in 1935. Only infection on Illinois has been found in Indiana and Illinois. The first time naturally introduced infection on Illinois has been reported in Illinois and Indiana was 1936. One northern Illinois and two northern Indiana counties were found to have infected bushes.

Previous to 1934 infection in pine stands was very seldom found so intense that immediate local control was imperative, but in 1935

Compensation Cases Reported to the Attorneys Office, 1953

State	Prob. Test	Swear like and injury	Eye injury	Back and limb	Infection	Fractures	Grass injury	Compens. Total	Settled per 1000
Illinois								0	0
Indiana								0	0
Iowa		1	2					3	4.06
Kentucky		1	2	4	1		10	23	6.07
Louisiana	2	1	8	4	4	1	10	25	10.88
Mississippi								0	0
Missouri	4	3	7	3	3	1	10	28	11.20
Nebraska								2	10.08
North Carolina	1	8	1	14	4	1	1	29	7.50

a few improved types were encountered where the infection was so heavy that sanitation was deemed of little value to the existing crop of trees.

The 1935 infection centers cover the label well according to stated and recorded.

Illinois - In the early Fall of 1933 Dr. J. W. Corlies found infection on well-known Black Spruce trunks in Warren, Jo Daviess County, which is on the extreme northwestern corner of the state.

Indiana - Deane, Evans and Franklin is a meeting trip across northern Indiana in March, 1934. Found *Elm* *granulosa* and *E. nigra* infected in the central portion of LaGrange County. One infected *E. granulosa* was also found in LaPorte County near Lake Michigan. These two infections were the first naturally introduced infection on either *Elm* or *pine* in Indiana.

Iowa - No infection was found in the state in 1935.

Michigan - Although no *Elm* infection was reported for the first time in 1935, five counties were added to the list in which pine infection has been found. The Michigan personnel found infection on white pine in one or more areas in the following counties: Emmet and Schoolcraft in the Upper Peninsula; Benzie, St. Clair and Washtenaw in the Lower Peninsula.

Minnesota - Infected *Elm* were found for the first time in Goodhue County and pine infection was found for the first time in Ford and Redwood Counties. These infection centers extend the infected range in Minnesota in both a northerly and northwesterly direction.

Miss - There was an increase in the known range of infection on pine in the state, but infection on *Elm* was found in Wayne and Black Counties which did substantially extend the range of infection in a southwesterly direction to Ohio.

Wisconsin - Probably the greatest known general increase in infected counties was observed in Wisconsin. Infection on *Elm* was noted for the first time in Fond du Lac, Winnebago and Rock Counties, while infection on pine was noted for the first time in Buffalo, Dodge, Eau Claire, Langlade, Outagamie, Polk, Shawano, Vilas, Washburn and Winnebago Counties. The addition of the above counties to the infected group in Wisconsin practically covered the northern half of the state and added some of pine infected counties.

During the last two years general infection on *Elm* is more nearly a common thing than it is an exception. With such general distribution and increasing frequency of infection on *Elm*, it is practically impossible for a young sapling of one of white pine to reach commercial maturity before conditions as they exist today in the North Central Region.

Gradually the distribution of infection on either pine or *Elm* is given by Appendix for much of the upper lake states of the

Estimated Memorial Value of White Pine Growth
in North Central Section, 1988

State	Range of Diameter	Estimated Value
Illinois	1,000 acres @ \$100.00	\$ 100,000
Indiana	2,000 acres @ \$100.00	200,000
Iowa	3,000 acres @ \$100.00	300,000
Michigan	<p>From W.P. over 8" D.B.H. 60,000 acres @ \$10 = \$ 600,000</p> <p>Pure W.P. under 8" D.B.H. 45,000 acres @ \$15 = 675,000</p> <p>Mixed W.P. over 4" D.B.H. 60,000 acres @ \$10 = 7,000,000</p> <p>Mixed W.P. under 4" D.B.H. 60,000 acres @ \$7 = 420,000</p> <p>Mixed W.P. all ages 275,000 acres @ \$10 = 2,750,000</p> <p>Scattered W.P. all ages 500,000 acres @ \$1.50 = 750,000</p> <p>\$1,900,000 @ 2% seedlings @ \$1 per acre = 38,000</p>	34,330,000
Minnesota	<p>Mixed W.P. all over 8" D.B.H. 600 acres @ \$100 = 60,000</p> <p>Scattered W.P. all ages 500,000 acres @ \$15 = 7,500,000</p> <p>28,000,000 W.P. seedlings @ \$1 per acre = 28,000,000</p>	7,900,000
Missouri	all ages W.P. 7,000 acres, all memory W.P.	1,000,000
Wisconsin	<p>From W.P. over 10" D.B.H. 51,000 acres @ \$10 = 510,000</p> <p>Pure W.P. under 10" D.B.H. 150,000 acres @ \$10 = 1,500,000</p> <p>Mixed W.P. over 10" D.B.H. 51,000 acres @ \$10 = 510,000</p> <p>Mixed W.P. under 10" D.B.H. 51,000 acres @ \$7 = 357,000</p> <p>Mixed W.P. all ages 150,000 acres @ \$10 = 1,500,000</p> <p>Scattered W.P. all ages 500,000 acres @ \$1.50 = 750,000</p> <p>18,000,000 W.P. seedlings @ \$1 per acre = 18,000,000</p>	32,000,000
Wisconsin Totals		100,000,000

Previous Use of White Pine

Reference is made to the third graph showing, for the period 1888 to 1934, the production of white pine lumber by region, by class as of timber within the Lake States; and white pine use in each of the three Lake States. Information on which these charts are based was taken from "Lumber Production 1888-1934" compiled by the Division of Forest Economics of the Forest Service in 1936.

Figure 204 shows that from 1888 to 1911 the Lake States region including Michigan, Wisconsin and Minnesota produced more white pine than the other regions combined. From as late as 1900 more white pine was produced in the Lake States than in the northwest.

Note that after 1898 the use of white pine in the northwest steadily increased while in the Lake States it fell rapidly to 1908 and then decreased as rapidly to 1918. Presumably in the northwest the peak of white pine use was prior to 1895.

The use of white pine including western white and sugar pine in the far west was relatively insignificant in relation to the total white pine use until about 1900. By 1915 about 40% of the white pine was from the far west.

The total calculated use of white pine in the three major regions of the Lake States, the northwest and the far west for the period 1888 to 1934 was 681,700,000 board feet. This was arrived at by multiplying the annual output for each of the three years by ten and adding it to the totals of the individual years. We have found also that the three Lake States have produced 70.3% of the white pine use history, the northwest 24.7% and the far west 4.9%. This is in striking contrast to the percentages for the year 1934, viz., 15.2% in the Lake States, 21.9% in the northwest and 62.9% in the far west.

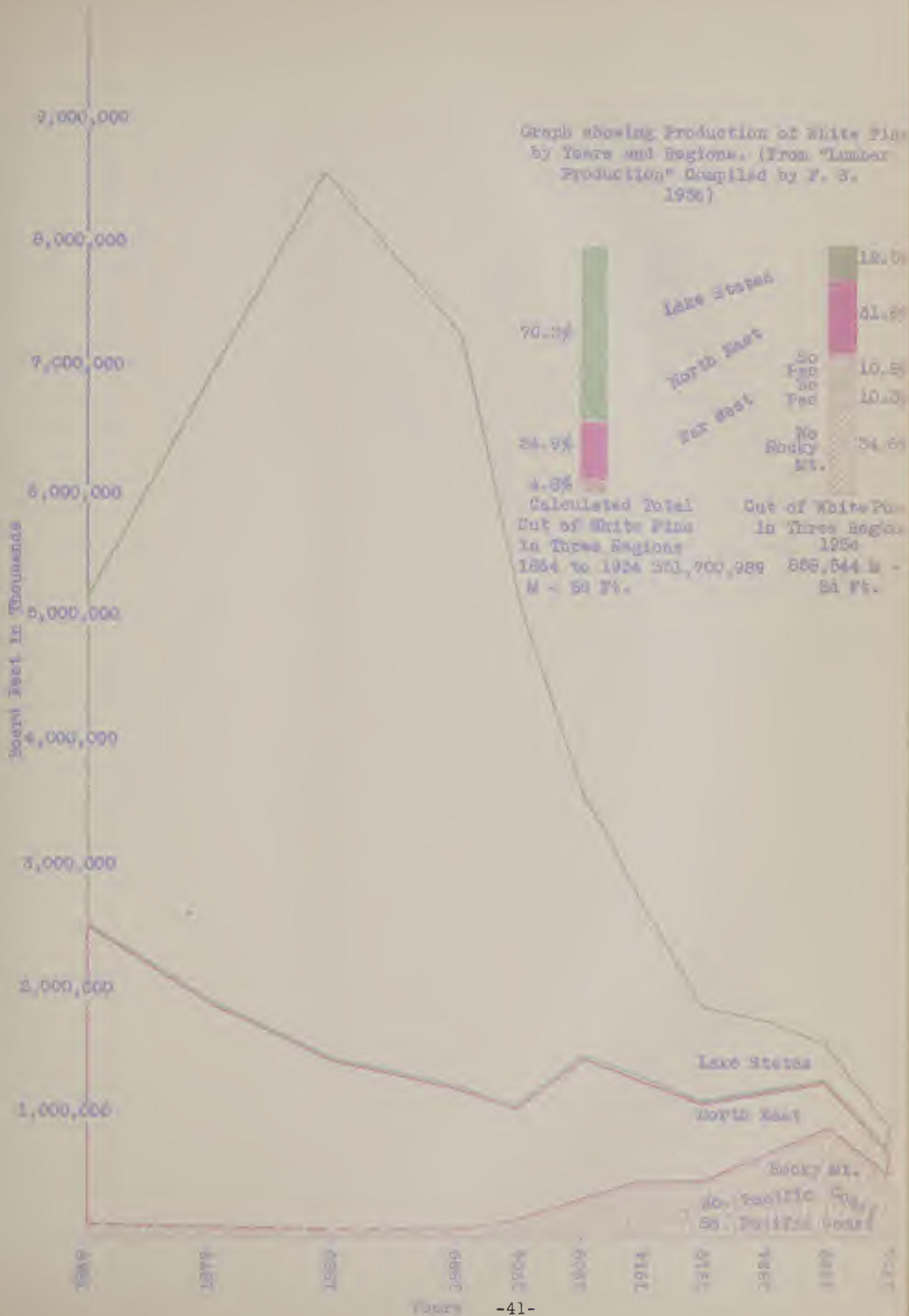
It should be noted that use of red pine in the production of 19 18 assumed that presumably heavy pine is included with white pine in the Lake States and the northwest.

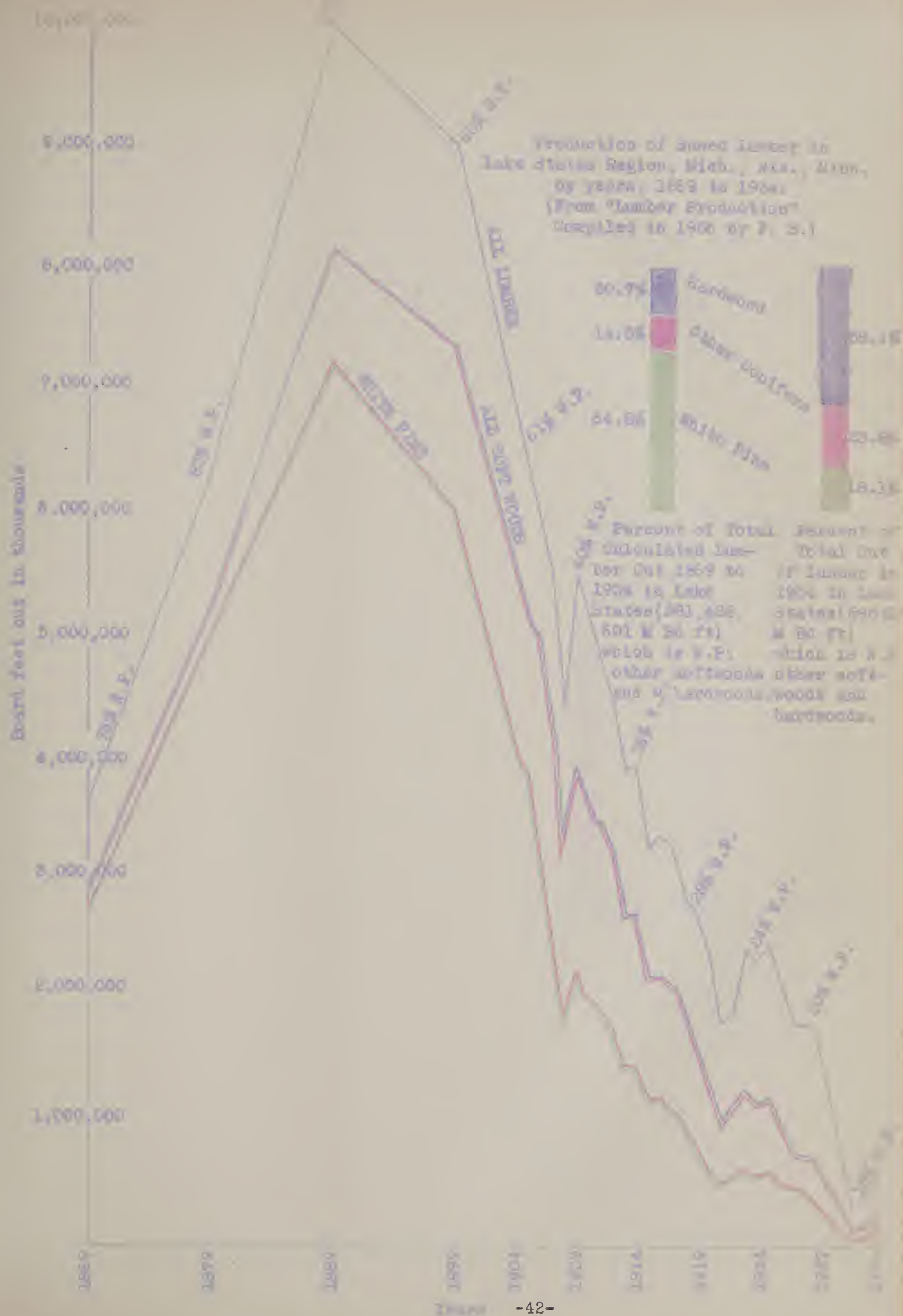
Reference is made to the chart showing the relationship of the production of saw timber of white pine to that of all other softwood and hardwoods by years in the Lake States Region. Note that the percentage of the total use of white pine steadily decreased from 48% in 1899 to 18% in 1934. It is surprising that the use in the Lake States in 1934 showed as high a percentage of white pine as it did.

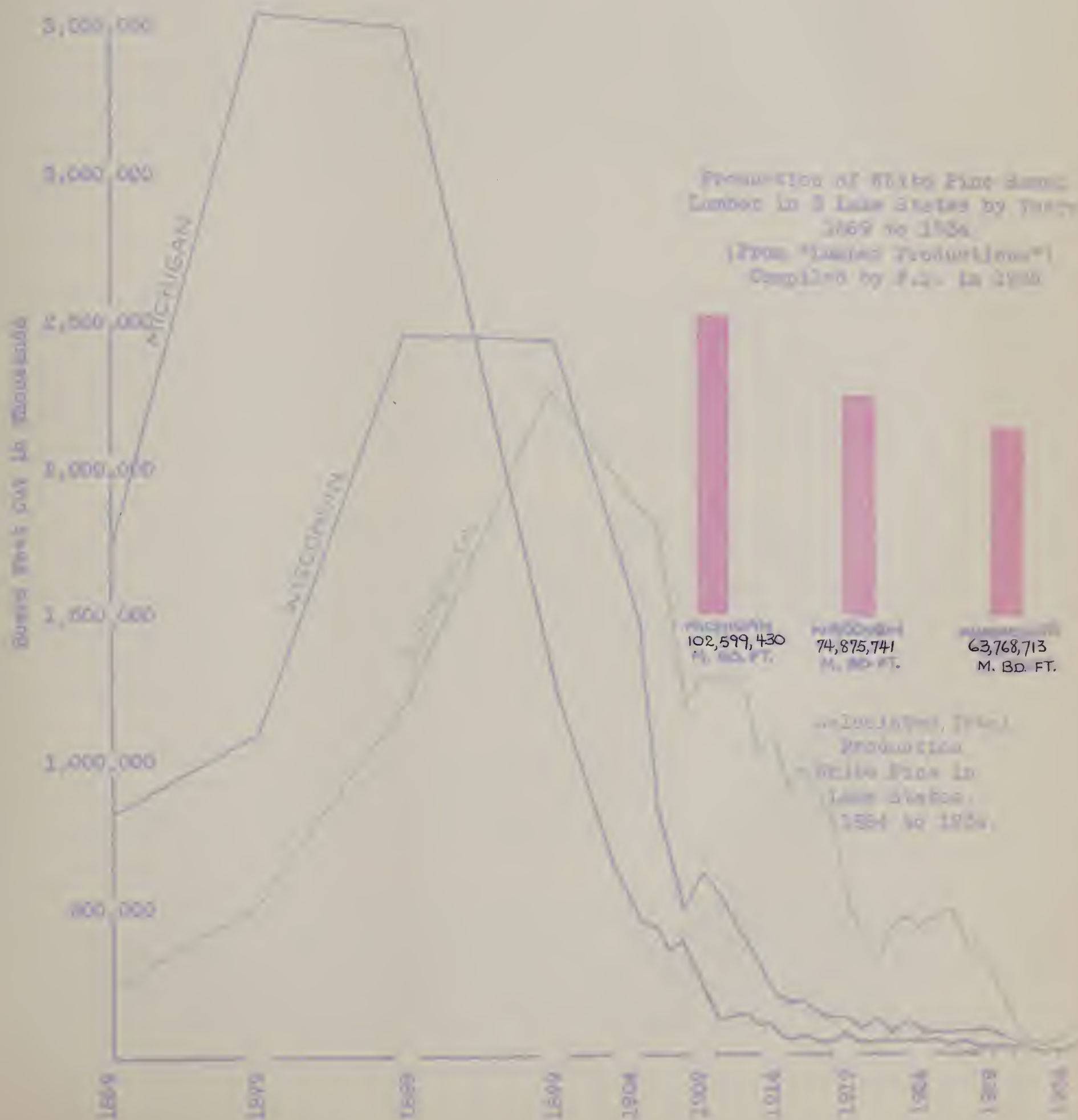
The total calculated production of saw timber in the Lake States from 1888 to 1934 was 51.8% white pine, 14.3% other softwoods and 33.9% hardwoods. In 1934 these percentages were 18.3% white pine, 21.9% other softwoods, 59.8% hardwoods.

The last of these charts shows the production of white pine in each of the three Lake States. Note that the peak of white pine production in Michigan was from 1875 to 1888; the peak for Wisconsin, the next state west, 1889 to 1900; and the peak for Minnesota, still farther west, was in 1895. Note also the rapid falling off of the use of white pine

Graph showing Production of White Pine
by Years and Regions. (From "Lumber
Production" Compiled by F. S.
1936)







the White Pines and Wisconsin after the end of the peak period and the Minnesota were gradual falling off of the rest of white pine in Minnesota after their peak year of 1937. In fact, during the year 1937 the practically 1000 acres was more white pine cut per year in Minnesota than in the other two states combined.

These statistics bring out in striking fashion the importance of this Region as a producer of white pine in the past. There is every reason to believe that with proper management and proper protection measures against fire, insects and diseases this Region was again among the important ones in the production of white pine. The land is still here, the same climatic profile, the same soil is here. What we are all striving for is to bring up to a satisfactory level the acre of white pine on the short projection into the future and maintain this acre in a fairly horizontal position indicating sustained yield management. In accomplishing this purpose blitzer work cannot meet play a vital part, since the work causes the greatest and most widespread source of young stands on which we are depending for the future production of timber. With proper blitzer work careful management as part of the management scheme there is no cause for alarm as to the future of blitzer work.

Pre-eradication Survey

Typical to blitzer eradication work a pre-eradication survey is performed around white pine stands. A way to make, usually at a scale of feet inches to the mile, of the pine stand and control area. The entire area is divided into portions requiring initial work, spread work and final work. Estimates based on previous experience of man days required to do the control work are made. This map and the accompanying information are used by the eradication foreman performing the control work.

The method of making pre-eradication surveys depends largely upon the experience of the man doing the work. Usually strips are run through the area sufficiently close together to enable the worker to completely see and sample the various types. In most cases a distance of two chains between strips has served this purpose. In order to obtain the number of young per acre, several counts are made in certain portions of the strip and these figures are then converted to number of pines per acre of the different size classes.

In general, pre-eradication survey work in this Region around native white pine stands has been fairly completed. Further work is now in great measure for starting white pine. The locations of such areas are supplied the blitzer part worked organization by the Forest Service, the various State Conservation Divisions and the Soil Conservation Service.

In Table 3 there is shown a statement of pre-eradication survey work done in this Region in 1938 around white pine stands. It will be noted that during this year a total of 179,082 acres was surveyed and yielding 100,077 acres of white pine stands protecting. To do this required 15,711 man days or a total cost of \$73,655.05. The cost per

Iowa - In Iowa the central problem chiefly concerned the protection of white pine shelterbelts. By far the greatest amount of work was done through the W.P.A. program, although a small amount of control work was performed through the National Parks Service U.S.V. and the Iowa Conservation Commission around state parks. Under the W.P.A. program 1,125 white pine shelterbelts were given initial protection in sixteen counties. A relatively small amount of crew work in Iowa in relation to start work is shown in Table 5, where it will be noted that less than 2% of the total area was worked by crew and more than 98% was worked by scout or was Ribes-free. This is an average of slightly more than three acres of crew work per white pine shelterbelt. An average of four men days per shelterbelt was used and the average cost per shelterbelt amounted to \$18.20. Although at first glance this cost of \$18.20 per white pine shelterbelt seems high, it must be remembered that in a prairie state like Iowa shelterbelts are extremely valuable as a protection against the elements. White pine is considered as one of the best shelterbelt trees and each tree individually is highly valued. The loss of white pines in shelterbelts from blister rust would be keenly felt by the owner and it would take many years to replace such pines.

In performing control work around shelterbelts, a crew of from three to five men under the direction of a crew foreman was used. A greater degree of responsibility was placed on the crew foreman in Iowa than obtained in many of the other states. It was necessary that a crew foreman earnest the owner, obtain his cooperation and consent and make sure that no damage was done to other property. In general, the type of crew foreman made available to the blister rust organization by the various W.P.A. officials was satisfactory. The usual practice in performing local control around shelterbelts was for the regular crew to perform the work. Later on a special checking crew of three men visited every job and gave at least the crew portion a 100% check, pulling all Ribes found. If more Ribes were found than the checking crew could pull in the time allotted, the original crew was required to do the work over. In most shelterbelt work, however, it was not necessary for the original crew to rework the area.

Indiana - The major portion of the local control work done in Indiana concerned the protection of planted white pines. A review of records in Indianapolis showed that approximately 250 persons had received shipments of 200 or more white pine trees during the last three year period. Plantations of one-half an acre or larger were considered for protection. However, stands having only half an acre of white pines were not protected if very much crew work was required. Fortunately in Indiana Ribes bushes are not abundant except in certain areas. A total of 24% of the acreage worked for Ribes was worked by scout and only 16% by crew.

The work was done by a crew of four or five men under the direction of a crew foreman. Since the areas to be worked were scattered, the state leader was faced with the problem of either continuously training new crews for a few jobs which would be completed shortly after the crew was trained, or else transporting trained crews considerable distances which was both expensive and impracticable.

Furthermore, difficulties were encountered in moving W.F.A. men from one county to another county. Work was conducted under this act-up as far as possible and area to cover as wide a radius as possible without undue cost. The ideal method of performing local control in Indiana would be to use a trained mobile crew traveling in a government car and allowed a small per diem. Such a system was used in Ohio in 1954 and good results were obtained. For the most part, good work was done in Indiana by men employed on the W.F.A. program. The various District W.F.A. offices cooperated in excellent fashion in attempting to furnish men adapted to this type of work.

Michigan - In Michigan there were chiefly two systems of labor for control work, viz., CCC and W.F.A. Crew organization was essentially the same, i.e., in a group there were twenty laborers, four area foremen and one supervising foreman. In general, the supervising foreman was a skilled laborer, the area foremen intermediate laborers and the crew men unskilled laborers. The state and District W.F.A. offices cooperated in a very satisfactory manner and for the most part good men were obtained. Furthermore, under the W.F.A. program it was possible to select good men and to dismiss undesirable. In the CCC program there was not the same direct control over the personnel and it was necessary to use the men allotted for the work, whether or not they were well adapted to such work. For these reasons more effective and economical control work was performed under the W.F.A. than under the CCC program. This fact is indicated in Table 3, where it may be noted that under the W.F.A. program an average of practically 79 Ribes per acre were removed using 135 man days per acre, while under the State CCC program 125 man days per acre were used in removing Ribes at the rate of 69 bushes per acre in initial eradication.

Of the total of 307,071 acres worked in Michigan, 245,983 or 79% were initially worked. Approximately 5% of the total acreage was worked by crew and 95% by truck.

Minnesota - In Minnesota several methods of Ribes eradication were used, chiefly in the W.F.A. program.

Draw Eradication - Standard crew of five men and a crew foreman. The men in line were spaced six to twenty feet apart. The crew foreman walked back and forth behind the line.

Mini Crew - This consisted of three or four men working 30 to 100 feet apart. It was used in working areas where Ribes were present only in patches or other spots favorable for their growth, or in pastures where the bushes were large and scattered. The mini crew must be composed of experienced eradication labor if effective results are to be secured. This type of eradication was not extensively used in 1955 due to the lack of trained men.

Pre-eradication Check Crew - Especially in the western parts of Minnesota's white pine area a considerable portion of the white pine stands grow in ridges with Jack and Norway pine in light soils. As a general rule Ribes are absent on this type of soil and it is only necessary to find patches where Ribes bushes occur. The method of working such areas was by means of a pre-eradication check crew. This

the rate of 660 per acre. To remove those Ribes it was necessary to use 1.62 man days per acre. The value of the pine protected on the Indian Service lands was so great that the Indian Service officials felt the cost was justified.

The use of relievers in Ribes eradication under the W.P.A. program was very satisfactory. This is brought out in Table 15, where it will be noted that .36 man days per acre were used, 36% of the total E.C.W. program and under the W.P.A. program. However, under the former program, Ribes were removed at the rate of 32.7, while under the W.P.A. program 117.8 Ribes were removed per acre.

Of the 184,888 acres worked in Wisconsin in 1935, 87,542 or 47% were worked by crew and 97% was worked by the scout method.

Analysis of Ribes Eradication in 1935

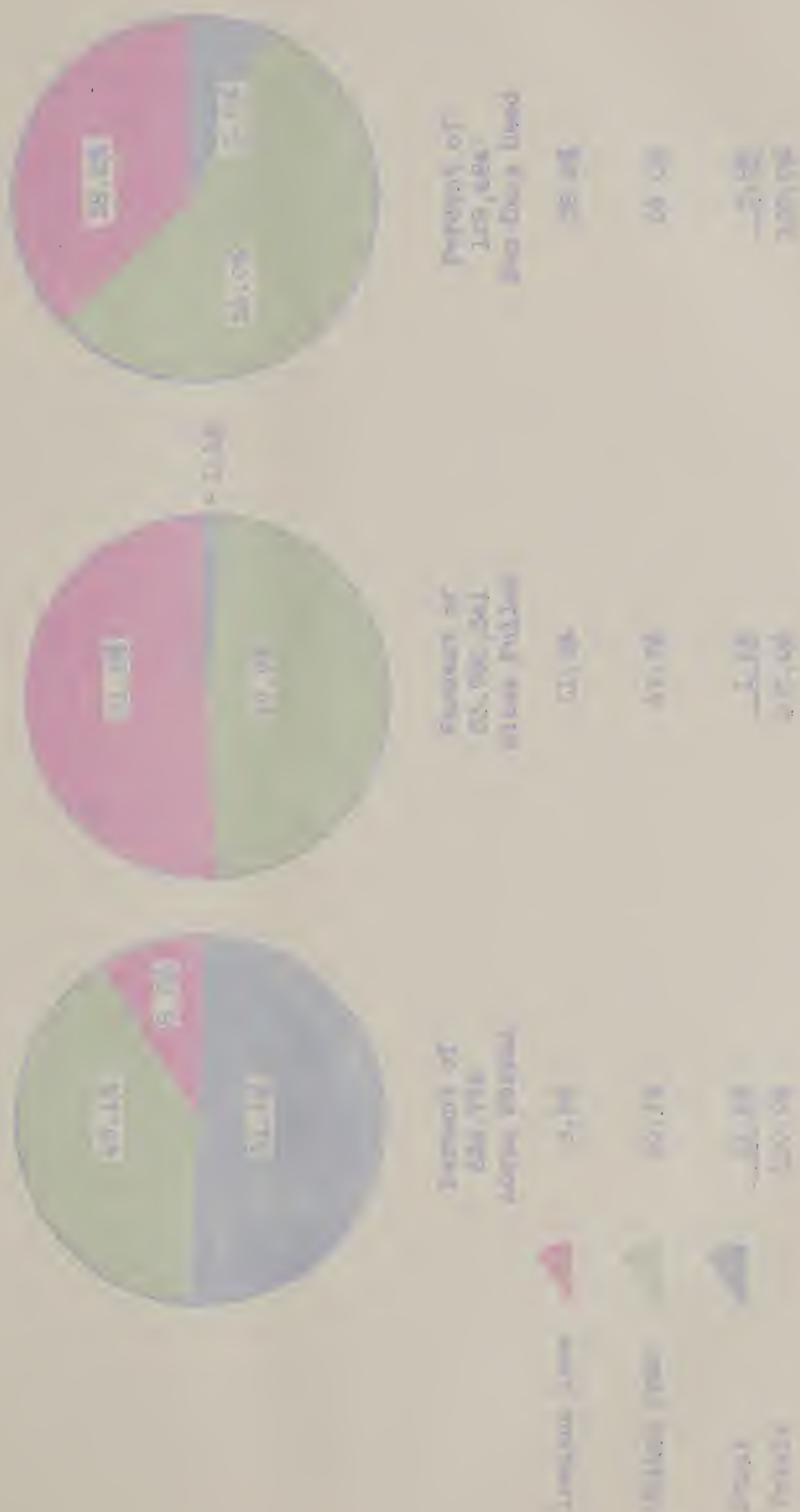
Three eradication types are recognized and used in this region. These are Lowland Crew, Upland Crew and Scout. Lowland Crew work is done in swamps where Ribes occur in abundance. The work is close formation. The Ribes bushes for the most part are small and spindly, growing usually under the general level of competing brush. In eradicating these Ribes bushes it is almost impossible to get all the crowns. Ribes bushes propagate themselves abundantly in swamp conditions by means of layering. That is, roots are formed from buds on stems in contact with moist ground. Care must be taken to hang all bushes up, not to break the stems, and to be sure to grab the crowns.

Upland Crew formation is used in all upland types where Ribes are sufficiently abundant to require crew work. The men work usually six to twenty feet apart, depending on abundance of Ribes and density of brush. The various harvested types usually have to be worked by Upland Crew formation.

The Scout method is used on all upland types not requiring crew work. Ribes-free muskeg swamps are also included in this category, as well as cultivated fields and other Ribes-free areas. Areas scouted are covered either by one man zig-zagging over the area and scouting fence rows and other likely places for scattered bushes, or by a crew of three to five men working 25 to 100 feet apart.

As can be readily recognized, there is a wide difference in the costs and Ribes per acre in these three types. Analysis of Ribes eradication in this region during 1935 by Ribes eradication types may be seen in Table 17. The significant facts in Table 17 are quite strikingly brought out in the accompanying pie charts. Please note that 8.6% of the total area worked was worked by Lowland Crew. On this small portion 51.2% of the total Ribes was pulled and 38.8% of the total man days was used. A total of 45,387 acres of Lowland Crew was worked, using an average of 1.54 man days per acre. On Upland Crew an average of .42 man days per acre was used. If the 80,885 man days devoted to Lowland Crew had been applied to Upland Crew work at the rate of .42 man days per acre, it would have been possible to work 145,000 acres of Upland Crew instead of only 45,387 acres of Lowland Crew. We are setting down the protective zone limit in low-

The Charts Showing Analysis of AIDS Epidemiology by Stage Type -
North Central Region, 1989



In Table 10 the information in Table 14 has been analyzed to show the percent of acres in each type of live stem which was worked by each of the three eradication methods. Note that in the 68.4% acres where no Rites were found after eradication, 1.7% was worked by Lowland Creeper, 18.3% by Upland Creeper, and 80% by Spray. Of the 24% acres on which over 50 feet of live stem remained after eradication, 51.6% was Lowland Creeper and 48.4% was Upland Creeper. If there had been no late fall eradication in these areas, the differences in Rites remaining after these three methods of Rites eradication would be still more striking.

Special Checking on Late Fall 1958 Rites Eradication

During November and December of 1958 V.F.A. men joined the Wildlife and Fish and Game Service in a limited extent on Rites eradication after the Rites leaves had fallen. A total of 8,972 acres in Lowland Creeper and Upland Creeper was worked after the leaves had fallen. A special record of this work was kept and the areas were carefully checked in the spring of 1959 to determine the effectiveness of late fall Rites eradication work. The results are shown in Table 11. Note that in the areas Rites were found in the spring of 1959 after fall eradication at the rate of 180.3 feet of live stem per acre, and on Upland Creeper types at the rate of 17.1 feet of live stem per acre.

In the spring bushes found were classified into mixed bushes, imperfectly pulled bushes and sprouts from crowns. In the Lowland Creeper work 60.3% of the feet of live stem was from mixed bushes, 7.3% from imperfectly pulled bushes and 32.4% was sprouts from crowns. In the Upland Creeper work 88.3% of the live stem was from mixed bushes, 7.3% from imperfectly pulled bushes and 4.4% was sprouts from crowns. The high percent of live stem classified as mixed bushes indicates the difficulty of finding the bushes in late fall after Rites eradication.

In Table 12 a comparison has been made by eradication type between the late fall of 1958 eradication and that performed during the regular late eradication season. Comparisons have been made on the basis of Rites destroyed per acre, man days used per acre, feet of live stem per acre after eradication and percent of acres worked satisfactorily. The number of Rites destroyed per acre on the average was higher during 1958 late fall than during 1958. However, the man days used per acre in late fall on both Lowland Creeper and Upland Creeper were much higher in proportion during the late fall eradication than during the normal season. This would indicate that the work in the late fall was more expensive than during the normal season.

The work during differences, however, showed up in the amount of feet of live stem per acre remaining after eradication. In the Lowland Creeper there was an average of 180.3 feet of live stem per acre after the late fall eradication, as opposed to an average of 17.3 after the normal season's work. In the Upland Creeper there feet of live stem were 17.1 and 15.4, respectively. In the late fall eradication there were no acres worked satisfactorily by Lowland Creeper, and only 31.7% of the Upland Creeper acres was worked satisfactorily. In the normal season 88.3% of the Lowland Creeper worked and 79.3% of the Upland Creeper worked were satisfactory.

These data indicate clearly that Rites eradication work after the

leaves are gone is more easily and readily taken off than when some leaves are still on the stems. This is particularly true in lowland areas. While sanitation after the leaves have fallen should only be done where there is an abundance of labor willing to be employed and on upland areas where labor costs are large and where there is a minimum of associated break.

Nursery Sanitation

During the spring of 1958 a total of 41 nurseries was either visited for the first time or checked for silvics within the 1000 foot zone, and subsequent check surveys made for a while. In order to make doubly sure that no silvics were within the 1000 foot zone, it is necessary that this zone be checked annually for silvics. This is particularly true of all of those nurseries which have applied for a Federal white pine shipping permit. The blight pest control organization worked in close cooperation with the Division of Domestic Plant Quarantine in this work. The inspector for the Division of Domestic Plant Quarantine was kept informed as to when nursery sanitation work started around each nursery applying for a Federal white pine shipping permit and when the work was completed to be completed. When the work was actually complete the inspector was notified immediately and he performed his inspection as soon as possible thereafter, usually accompanied by the state Dealer or blight pest agent concerned.

The results of nursery sanitation work in this Region in 1958 are shown in Table III. Over 1,000 acres in 41 nurseries were protected by the removal of 604,375 silvics from 14,504 acres. A total of 6,488 man days was used at a cost of \$18,487.18, exclusive of \$188.41 of state contribution.

The classification of ownership of the 41 nurseries was as follows:

U.S. Forest Service, 10 nurseries
U.S. Indian Service, 1 nursery
U.S. Soil Conservation Service, 8 nurseries
State, 8 nurseries
Private, 14 nurseries

The number of nurseries applying for and receiving Federal white pine shipping permits in 1958 by state is as follows:

State	Applying for Federal shipping permit	Obtaining Federal shipping permit
Iowa	4	4
Michigan	5	5
Minnesota	4	4
Ohio	9	8
Total	22	19

Cultivated Black Currant Elimination

During 1938 a considerable amount of work was done in systematically searching for and destroying cultivated black currants within white pine growing portions of the Region. This work was performed chiefly before and after the Ribes eradication season on Federal W.F.A. lands, except in Ohio where a State W.F.A. project was inaugurated and given technical supervision by the state leader. Details of the way this work was performed under the Federal W.F.A. program as well as the State W.F.A. organization are described in detail in the various state reports. In general, very good results were obtained in this work in using W.F.A. labor. The work of searching for black currant bushes was systematically performed by crews of men varying in number from two to four. Every property was visited. In the event cultivated black currant bushes were located, the reason for their removal was carefully explained to the property owner and his permission obtained if possible. In all states but Ohio the crew finding the bushes also destroyed them, provided permission was obtained. In Ohio men were searched for the bushes and the destruction was carried out by a different crew. Of course, all destruction was by state authority. No compensation was paid. A high degree of cooperation was obtained from property owners. By far the largest proportion of them voluntarily gave up their cultivated black currants. In Ohio, where the greatest amount of cultivated black currant work was performed in 1938, 98% of the owners gave up their bushes and only 2% refused to do so. In the nearly 10,000 locations of cultivated black currants destroyed in the Region in 1938 in only three cases, and those three in Ohio, was it necessary to use state authority in the removal of bushes.

Prior to the inception of a cultivated black currant campaign in a given territory, care was taken to fully inform the public by newspapers, posters and otherwise that an active campaign to destroy cultivated black currants would shortly be brought about, and the reasons for such campaign. This publicity prior to the actual black currant campaign was probably the biggest factor in obtaining such hearty cooperation from the public.

In Table 14 there is given a statement of cultivated black currant eradication performed in this Region in 1938. Note that by far the largest number of bushes found and destroyed was in Ohio. Approximately 98% of all black currant bushes found on initial eradication in this Region in 1938 was destroyed. A measure of abundance of cultivated black currants is the number of locations per thousand inspections. For the Region as a whole there were 10.1 locations per thousand inspections, or approximately 1%.

The status of cultivated black currant elimination in this Region at the end of 1938 can be seen in Table 26. Note that it was virtually completed in Michigan, Minnesota and Wisconsin. In Ohio approximately 80% of the work was completed and in Iowa 75%.

A certain amount of cultivated black currant recheck work was done in 1938 in Michigan and Wisconsin, the results of which are shown in Table 25. In this table the information is given on the basis of the year the original survey was completed. The bushes found on the recheck have been classified as those missed originally, seedlings,

sprouts and those planted since the original work was performed. In arriving at the percentage of total bushes found originally, the total found originally was divided by the sum of those found on the first working, plus those classified as missed on the recheck. On this basis it may be noted that in Michigan approximately 92% of the locations were found originally and 94.5% of the bushes.

It is surprising to note that on the recheck there were 14 locations in Michigan containing 613 bushes classified as seedlings. All of these seedlings were found in the Upper Peninsula of Michigan and the great majority in Houghton and Keweenaw Counties where Picea canadensis is abundant. It may be that some of the seedlings classified as Picea mariana seedlings were in fact seedlings of P. canadensis.

In Michigan and Wisconsin 68 locations were found on the recheck classified as planted since the original work. However, this is only slightly more than 1% of the total locations.

Canker Pruning

Canker elimination was performed in Michigan and Minnesota. This activity was restricted to such areas as parks, cemeteries and roadsides where such trees have considerable value and where the stand has been protected against blister rust. Cankers removed from such areas not only restored the attractiveness of the trees but prolonged their life. Their removal also forestalled the possibility of the general public misunderstanding and questioning of the effectiveness of control work. The work was performed in winter time, using W.F.A. relievers.

In Table 17 there is given a statement of such work performed in 1936. Note that 17,307 cankers were removed from 16,840 trees. The trees so treated presumably had cankers which would have eventually reached the trunk and killed the tree.

In Table 18 is shown the summary to date of this work.

Pine Studies

During 1936 the work of studying effectiveness of the blister rust control program was continued on plots already established and greatly expanded by the establishment of additional plots and studies. In general, this experimental work may be divided into two major groups:

- (1) Effectiveness of control by means of pine infection study plots
- (2) The study of Picea regeneration following eradication.

The purpose of the establishment of pine study plots is to study the effect of Picea eradication on the reduction of cankers and damage to the pine stands. An important study made in 1936 was to determine the effect of young Picea on adjoining white pine stands. In this respect there are many reasons extending into an area surrounded by good stands

of white pines. It is not economically feasible to remove every Ribes for the full protection and disease. Superficial inspection of various pine infection centers led to the belief that the spread of infection from every Ribes to white pines was not as great as from spruce Ribes. A quantitative study was made of this problem at Cross-lake, Minnesota, and on the Olaf Swolen property near LeRoy, Minn. At both of these places the original Ribes responsible for introduction of the rust had been destroyed. The rust had been present since approximately 1913. On neither of these areas was there evidence of concentrations of cankers on pines adjoining the spruce.

In studying Ribes regeneration after eradication, small permanent plots are laid out prior to Ribes eradication and marked in such an inconspicuous manner as to not be visible to the Ribes eradication crew. Prior to eradication, Ribes are recorded by species and feet of live stems. Following eradication and for successive years thereafter the plots are again gone over for Ribes. Results of these studies should give us the optimum time to perform subsequent eradication. This optimum time is after Ribes surviving eradication have become established and are large enough to be seen and before such bushes produce fruit.

In 1955 seventy-seven permanent Ribes regeneration study plots were established in the Region. Adding this number to those established in 1958 gives a total of 183 of such study plots.

Details of the experimental program conducted in the Region by Dr. Snowy are shown in his report which is appended.

Informational Activities

The success of a blister rust control program is dependent upon support on the part of the public, and particularly support from white pine owners. We are working on the control of a disease which for its success depends upon performing the work before blister rust has reached pine stands or before serious damage has occurred. Except in a relatively few places the damage caused by blister rust cannot be seen or demonstrated. In many respects blister rust control is similar to an insurance policy, in which the control work would correspond to the premium paid in insuring a stand against damage from blister rust from youth to maturity. It is important that the general public understand the damage caused by blister rust and the effective and economical methods of its control.

During 1955 the usual methods of disseminating information on blister rust and its control were through the newspapers, radio and county fairs, talks and pictures before schools and other groups, and the distribution of literature primarily in connection with cultivated black currants and other activities. Informational work done in each state is summarized briefly as follows:

Illinois - Local newspapers of Winnebago and LaSalle Counties were used to good advantage in giving publicity to local control work. Pamphlets were distributed freely.

Indiana - Only a minimum of information on blister rust had been distributed in Indiana. Probably the outstanding type of educational work in this state is the fact that the state forester has in the past been sending out white pine blister rust literature to those persons ordering white pine trees for reforestation purposes.

Iowa - Several thousand copies of the various publications on blister rust control were distributed by the field workers to shelter-belt owners and other interested persons. The most effective of the means of informational service was found to be personal individual contacts by well informed relief workers.

Michigan - Informational activities conducted in Michigan in 1935 included the following:

1. Combining tours to infection plots
2. Fair exhibits
3. Newspaper articles
4. Talks to schools and clubs
5. Distribution of bulletins
6. Posters placed in public places.

Minnesota - There was a large amount of publicity work regarding blister rust control conducted in Minnesota in 1935. In the daily and weekly press there were 26 articles on blister rust published in 21 papers, and there were three releases in the "Conservation News Letter."

Demonstrations were set up in one State fair and 19 county and community fairs. A window display was used at Duluth.

Thirty-two talks on blister rust control were given during the year attended by 3,315 people. Seventeen of the talks were given at schools, twelve at 4-H clubs and three at other groups.

A type of informational activity unique in Minnesota was the matter of giving demonstrations in the preparation of white pine seed beds in cooperation with county agents or 4-H club leaders. Twenty-three of these demonstrations were made cooperatively, so that the schools or other owners could grow and produce their own white pine under blister rust free conditions. This type of work increased the owner's interest in white pine grown and planted on areas protected against blister rust.

Ohio - A large amount of newspaper publicity was used chiefly in connection with the European black currant campaign during the year. There were 29 articles containing 480 columns inches published in 22 newspapers with a distribution in 20 counties. In addition, two articles were released to approximately 20 county agents, 760 grange lecturers and 600 newspapers as weekly press bulletins from the Ohio Agricultural Experiment Station.

One 30 minute illustrated talk was given by the state leader at the Ohio Forestry Association meeting, while informal talks were given at Mt. Union College, Kent State University, Oberlin College and Ashland College in conjunction with a strip film on blister rust control.

A white pine blister rust control exhibit was shown as part of the State W.P.A. exhibit in Elroy.

Approximately 15,000 blister rust pamphlets were sent out.

Wisconsin - Information on blister rust control was disseminated through direct contact, blister rust bulletins, articles placed in local newspapers, radio talks, short courses given in CCC camps, talks at schools and service clubs, roadside display signs, window displays, demonstrations at State and County fairs and motion pictures of blister rust infections and of control activities in the state.

Through the State Department of Agriculture and Markets, two blister rust control reels were made, one showing white pine tapping work and the other showing blister rust and control work. A third reel is being made which will show logging the white pines, the mill operations into lumber and products made of white pine. The aesthetic value of white pine will also be shown.

As one of the features of the informational program, the Indians of the Menominee Indian Reservation donated a large white pine log from virgin growth timber. This log, which was 20 feet long and 4 feet nine inches in diameter, was cut from a tree measuring 8 feet and 1/2 inch in diameter at the base. The log was placed as a permanent exhibit at the south entrance to the Wisconsin State Fair Grounds, Milwaukee. The tree was 231 years old. A three inch cross section of this log was placed on display in the indoor exhibit. Various historic events which had occurred during the life of the tree were listed and connected with the annual rings which grew during the years the events happened.

Costs

Cost figures for the entire blister rust control program in the Region are shown in Tables IV to VI. The total spent and contributed toward the control program in the Region during 1936 was \$1,015,869.58. It will be observed in Table VI that 69.36% was spent on wages and 16.82% on other than wages.

The accompanying three pie charts show the proportion spent in each state, the proportion spent on each activity and the proportion contributed by the different programs. These charts are self-explanatory. Particular attention is called, however, to the fact that 69.6% was spent on local control, 15.0% on general control, 2.4% on field data and 13.0% on general supervision. Included in general supervision was the total cost of the Milwaukee office, with the exception of Dr. Sawyer's time, which was charged to field data.

Also 60.3% was contributed from the various W.P.A. programs, with the major portion, 78.3%, coming from the Federal W.P.A. program. A total of 11.5% was spent by the various U.S.D.A. agencies, 5% by the state and other cooperating agencies and 2.4% was from the regular DNR appropriation.

Pie Chart Showing Proportions of Total Wildlife Shot Control Funds (\$1,012,659.58) Expended in Milwaukee Office and Each State. North Central Region, 1936.



Milwaukee Office	2.6%
Illinois	0.6%
Indiana	0.7%
Iowa	4.7%
Michigan	27.8%
Minnesota	24.2%
Ohio	8.6%
Wisconsin	50.9%
Total	100.0%

FIG. 1. Pie Chart Showing Proportions of Total Siphon Fund Control Funds (\$1,012,659.58) Charged to Different Activities, North Central Region, 1956.



Control	44.5%
Survey	39.3%
Other	16.2%
Pre-elimination Survey	9.4%
Area Reservation	88.8%
Total Local Control	89.1%
Survey Activities	1.7%
C.Y.O. Elimination	11.6%
Census Elimination	0.2%
Cult. Values Destroyed	1.5%
Total Survey Control	15.0%
Field Data	6.4%
State Control	1.7%
Other	0.1%
Grand Total	100.0%

Recommendations

A good start has been made in the initial protection of white pines against blister rust in this Region. This work should be continued as rapidly as possible in order to complete the initial work around all existing white pine stands worth protecting before such stands have been damaged by blister rust. The rust is now so well established in the Region that it is only a question of time before all young stands in which blisters are allowed to remain will be attacked and killed before the trees reach maturity.

A long-time control program has been developed for the Region which provides for the orderly protection of all pine stands in the Region from youth to maturity. This program provides for the corresponding protection of pine stands where it is needed. The program should be followed as closely as possible, subject to the provisions made necessary by availability of labor.

The use of relief funds for control work has proved successful, and so the fact that with training and with a wide range of expenditures can be done, and that a high proportion of the expenditures go directly to salaries and wages, since very little equipment is necessary. It is recommended that when available, relief funds should be used for the employment of labor in the general control program.

Good good forest management, with protection against fire, insects and diseases, including blister rust control, there is every reason to believe that this Region can in the future again assume its rightful position as a leader in the production of white pine.

Table 1. - Approximate Number Men Months employment in various Post Control Activities, Milwaukee Office, 1936.



Table 2. - Summary of approximate number of men months
employed on Malaria Control Unit (M.C.U.) in the North Central Division,
by Month and Program, January to December 31, 1955.

Program	Position	Approximate Number Men Months												Total
		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	
Regular	State & Regional Leaders	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	45.0
	Dist. & Asst. " "	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	10.0
	Supervisors & Asst. Clerks	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	10.0
	Laborers & Non-App. Clerks													0.0
	Sub-total	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	62.0
State	State Leaders & Cooperators	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	11.0
	Supervisors	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	10.0
	Laborers & Non-App. Clerks	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	30.0
	Sub-total	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	46.0
F.H. & W.C. S.O.W.	Supervisors	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	30.0
	Foremen	1.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1.0
	Laborers & Non-App. Clerks	1.0	0	0	0.2	144.4	412.1	324.5	340.9	227.2	1.0	1.0	1.0	1485.9
	Sub-total	5.0	3.1	3.1	3.3	148.5	424.2	327.6	341.0	228.3	2.1	2.1	2.1	1706.9
I.S. - S.O.W.	Supervisors	0	0	0	0	1.0	1.0	2.0	2.0	1.0	1.0	1.0	0	9.0
	Foremen	0	0	0	0	2.0	4.0	4.0	1.0	2.0	0	0	0	17.0
	Laborers	0	2.0	2.0	0	55.0	122.0	153.9	173.0	119.4	0	0	0	525.3
	Sub-total	0	2.0	2.0	0	58.0	127.0	159.9	174.0	122.4	2.0	2.0	0	641.3
Parks S.O.W.	Foremen	0	0	1.0	1.0	0.5	0.5	2.0	3.0	0.5	0	0	0	6.5
	Laborers	0	0	12.0	13.0	2.0	27.5	61.1	65.8	32.0	12.0	0	0	212.4
	Sub-total	0	0	13.0	14.0	2.5	28.0	63.1	68.8	32.5	12.0	0	0	218.9
State S.O.W.	Supervisors	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	50.0
	Foremen	3.0	7.7	3.9	5.8	12.5	13.7	11.9	9.9	8.7	3.2	0	4.3	75.4
	Laborers	8.0	14.0	15.5	3.3	64.0	223.4	181.1	160.4	119.4	32.5	0	5.0	545.1
	Sub-total	16.0	26.7	24.4	13.8	81.5	242.1	198.0	175.3	133.1	40.7	5.0	14.3	1130.5
S.O.S. - S.O.W.	Foremen	0	0	0	0.1	0.5	0	0	0	0	0	0	0	1.1
	Laborers	0	0	0	2.4	3.1	0	0	0	0	0	0	0	5.5
	Sub-total	0	0	0	2.5	3.6	0	0	0	0	0	0	0	6.6
W.I. Settlements Adm.	Laborers	0	0	0	0	11.2	19.4	9.2	0	0	0	0	0	39.8
County & State Relief	Laborers	0	0	0	0	0	7.4	7.4	0	0	0	0	0	14.8
F.T.A.	Laborers & Non-App. Clerks	2.5	2.3	15.0	15.1	17.0	10.0	9.0	9.5	8.5	7.9	9.0	9.5	125.1
F.P. - F.T.A.	Laborers	0	0	0	0	43.0	1.0	18.0	35.0	63.0	50.0	0	0	209.0
State F.P.A.	Supervisors	0	0	0	0	0	0	0	0	1.0	0	0	0	1.0
	Foremen	1.0	3.0	7.9	6.0	8.2	6.4	4.7	3.9	3.9	1.9	1.8	1.9	53.6
	Laborers & Non-App. Clerks	4.0	20.4	52.9	101.5	75.5	42.0	43.4	33.9	55.2	14.5	12.8	8.3	306.2
	Sub-total	5.0	26.4	77.8	107.5	81.7	49.4	49.1	57.8	62.6	16.4	14.5	10.2	539.5
Federal W.P.A.	State Leaders	0	0	0	0	0	0	2.0	2.2	4.0	4.0	4.0	4.0	20.2
	Dist. & Asst. Reg. Leaders	2.0	2.0	2.0	2.0	2.5	2.0	2.0	2.0	2.0	2.0	2.0	2.0	20.0
	Supervisors & Asst. Clerks	18.0	18.0	18.0	18.0	17.5	18.0	24.5	28.0	28.0	27.0	27.0	24.0	241.0
	Foremen Non-App.	25.9	22.9	28.3	37.3	60.4	61.0	59.7	55.3	64.7	66.8	43.2	42.0	524.8
	Laborers & Non-App. Clerks	240.6	224.0	205.5	248.7	304.6	1710.9	1970.2	2091.2	2100.5	870.2	271.2	247.0	11111.7
	Sub-total	325.5	284.4	267.8	303.0	382.0	1792.2	2064.4	2197.4	2227.4	938.0	355.4	327.6	12113.9
All Programs	State & Regional Leaders	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	45.0
	Dist. & Asst. " "	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	11.0	11.0	11.0	123.0
	Supervisors & Asst. Clerks	28.0	28.0	24.0	29.1	37.4	46.2	43.9	51.0	46.6	42.0	39.0	35.0	450.8
	Foremen	45.9	44.3	55.2	53.8	34.4	73.2	89.9	90.9	106.5	75.4	48.2	48.8	630.6
	Laborers & Non-App. Clerks	240.4	225.3	203.0	247.8	304.6	1710.9	1970.2	2091.2	2100.5	870.2	271.2	247.0	11111.7
	Grand Total	390.4	362.7	347.3	395.0	492.0	1885.7	2143.7	2232.2	2212.5	1137.7	404.8	375.9	17031.6

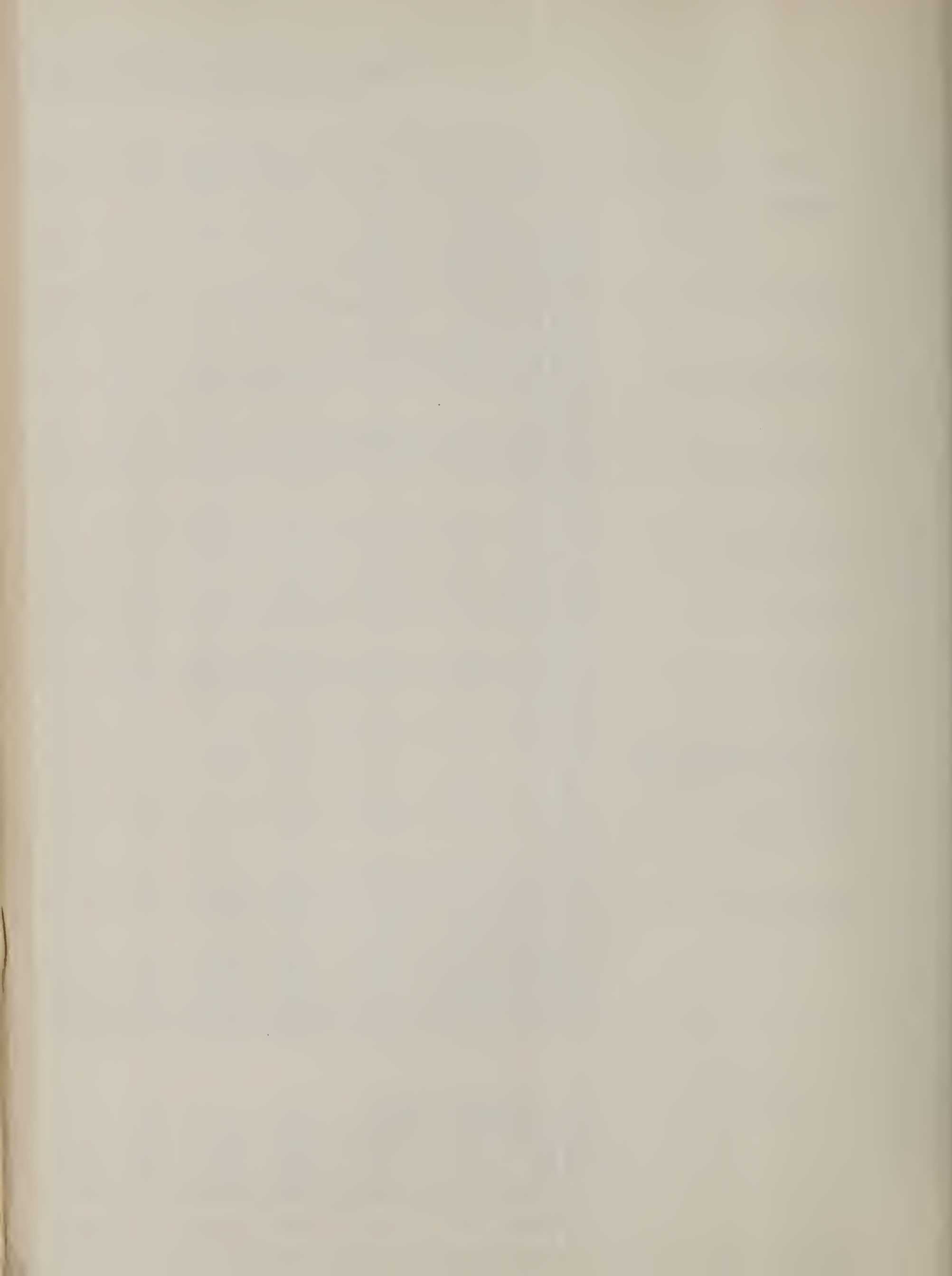


Table 30 - Summary of Approximate Number of Men Months Employed on Blister Munt Control Activities, All Programs, by month and States, North Central Region, Jan. 1 to Dec. 31, 1964.

Positions	Approximate Number Men Employed												Approx. Mo. Men Months
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	
Illinois													
State Leader	0	0	0	0	0	0	0	0.3	1.0	1.0	1.0	1.0	4.3
Foremen (Non-Appt)	0	0	1.0	1.6	0	0	0	0	3.3	6.0	4.2	1.0	19.0
Laborers	0	0	12.0	15.4	0.8	0	0	0	14.1	25.2	11.9	0.0	97.4
Total	0	0	13.0	17.0	0.8	0	0	0.3	18.4	32.2	17.1	2.0	120.7
Indiana													
State Leader	0	0	0	0	0	0	0	0.9	1.0	1.0	1.0	1.0	4.9
Foremen (Non-Appt)	0	0	0	0	0	0	0	0	5.9	4.3	3.2	3.0	16.3
Laborers	0	0	0	0	0	0.2	0	0	10.0	15.9	14.9	3.1	56.9
Total	0	0	0	0	0	0.2	0	0.9	16.9	31.2	29.1	7.1	78.2
Iowa													
State Leader	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	12.0
Supervisors (Appt)	1.0	1.0	0.0	2.0	2.0	2.4	2.4	2.0	2.1	2.0	2.0	1.0	20.9
Foremen (Non-Appt)	14.0	11.9	12.4	12.2	17.3	16.0	12.5	26.2	25.1	16.0	11.3	12.0	180.8
Laborers	9.0	7.0	10.8	12.2	21.0	24.4	25.2	21.8	73.6	36.9	11.5	10.2	200.1
Clerks (Non-Appt)	1.0	1.0	1.0	1.0	1.0	1.0	0.9	1.0	1.0	1.0	1.0	1.0	11.8
Total	36.0	31.9	35.2	38.2	52.3	64.8	67.8	111.0	138.0	76.0	46.0	26.0	543.9
Michigan													
State Leader	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	12.0
District Agents	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	24.0
Supervisors (Appt)	10.0	10.0	7.9	11.1	10.0	10.0	10.2	11.0	11.0	12.0	12.0	12.0	120.6
Foremen (Non-Appt)	4.0	9.8	2.0	1.9	6.0	5.2	11.0	8.7	6.0	1.0	0	0.3	59.8
Laborers	22.3	20.9	43.2	31.8	391.2	799.9	1022.2	1075.0	1075.0	230.9	27.0	20.0	4720.2
Clerks (Non-Appt)	4.5	4.6	4.6	4.5	4.0	3.0	4.1	3.5	3.5	4.6	5.1	3.1	51.8
Total	44.8	58.1	84.7	62.3	438.2	849.0	1057.0	1101.7	1236.9	470.6	45.1	40.1	3451.4
Minnesota													
State Leader	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	12.0
District Agents	3.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	24.0
Supervisors	4.0	4.0	4.0	2.0	2.0	14.8	10.8	17.1	12.0	9.0	9.0	9.0	102.9
Foremen (Non-Appt)	12.9	12.0	17.9	12.0	23.0	26.9	24.0	22.2	24.3	27.0	19.0	11.3	202.0
Laborers	25.2	22.0	22.9	20.4	279.2	739.9	629.6	950.2	214.4	25.6	12.1	26.6	2096.9
Clerks (Non-Appt)	5.8	6.0	7.0	7.9	2.7	2.0	2.0	2.0	7.0	2.0	2.0	2.0	50.9
Total	56.1	45.0	66.9	57.4	349.2	810.6	706.4	1101.7	436.0	70.6	40.1	64.3	2277.4
Nebraska (exclusive of Milwaukee)													
State Cooperator	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1.2
State Leader	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	12.0
Supervisors (Appt)	0	0	0	0	0.3	2.0	2.3	3.0	3.0	1.0	1.0	1.0	14.6
Foremen (Non-Appt)	0	3.3	7.9	2.0	2.6	7.0	5.6	6.4	12.9	6.1	4.6	7.0	77.9
Laborers	3.6	27.5	92.1	102.2	120.2	25.9	70.2	90.0	119.0	46.9	22.6	18.9	610.6
Clerks (Non-Appt)	0.3	0.2	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	11.0
Total	5.0	31.1	103.1	106.3	124.6	35.0	88.3	110.0	139.0	65.0	30.6	20.0	734.3
Wisconsin (exclusive of Milwaukee)													
State Leader	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	12.0
District Agents	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	24.0
Supervisors	10.0	10.0	10.0	10.0	12.2	12.0	12.0	12.0	12.0	12.0	12.0	12.0	120.0
Foremen (Non-Appt)	9.0	9.0	9.0	9.0	15.0	23.0	20.2	12.0	19.0	14.0	4.2	2.0	107.3
Laborers	62.0	20.0	20.0	110.0	274.0	241.2	427.0	206.0	241.0	75.0	21.0	21.0	2053.2
Clerks (Non-Appt)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	24.0
Total	86.0	53.0	53.0	133.0	637.2	515.0	709.2	439.0	500.0	160.0	40.0	40.0	2277.4
Milwaukee Office													
Regional Leader	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	12.0
Asst. Regional Leaders	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	24.0
Supervisors	1.0	1.0	0	1.0	0	0	0	0	0	0	0	0	10.0
Clerks (Appt)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	24.0
Clerks (Non-Appt)	5.9	9.0	9.0	9.0	9.0	9.0	2.2	6.9	6.9	7.1	6.2	2.0	80.0
Draftsman (Non-Appt)	0	0.5	2.0	1.4	1.0	1.0	1.0	1.0	0.2	0	0	0	11.1
Total	11.9	15.5	14.0	14.4	13.0	13.0	12.0	12.0	13.1	13.1	12.1	12.0	124.1
Entire Series													
State Cooperators	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1.2
Regional Leader	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	12.0
Asst. Regional Leaders	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	24.0
State Leaders	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	72.0
District Agents	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	60.0
Supervisors (Appt)	25.0	25.0	25.0	27.1	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	280.0
Clerks (Appt)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	24.0
Foremen (Non-Appt)	42.9	41.0	42.9	38.9	42.0	42.0	42.0	42.0	42.0	42.0	42.0	42.0	504.0
Laborers	236.0	201.7	209.4	209.2	2419.4	2222.2	2720.7	2149.6	2912.0	997.3	272.2	120.4	12500.2
Clerks (Non-Appt)	23.3	20.0	25.0	24.7	25.3	24.6	25.2	22.0	22.5	23.7	23.2	22.6	282.1
Grand Total	397.1	363.9	378.2	378.2	4282.7	3987.7	4681.7	3911.3	5117.7	1641.3	504.8	204.0	30211.0

Table 6. - Pre-Eradication Surveys Performed in North Central Region, 1936
White Pine Planting Sites

[illegible]

Table 7. - Cumulative Pre-eradication Survey Work on White Pine States
North of the 36° 30' Parallel to December 31, 1975,
in North Central Region.

State	Survey North of the 36° 30' Parallel			Acres		Acres	
	To Date			Surveyed		White Pine Plant-	
	SP	To Work	SP	To Work	White Pine	Estimated	Total
California	1,185	8,610	1,112	7,973	-	1,066	1,066
Indiana	2,622	3,628	2,435	15,631	150	383	253
Iowa	2,877	459,535	2,475	410,891	1,390	251	751
Michigan	540,216	1,612,040	437,928	1,305,759	502,400	813,500	893,172
Minnesota	207,460	517,858	178,170	425,925	525,637	32,350	59,451
Ohio	7,045	153,513	4,325	48,271	615	540,950	540,950
Wisconsin	327,000	1,199,210	222,750	850,461	895,500	92,000	114,592
Sub-Total	1,093,513	3,904,676	844,436	3,068,141	1,927,950	1,496,681	1,807,097

Table 16. - Acres of White Pine and W.P. Planting Site Protected, 1917-1936
North Central Region.

State	Acres W.P. Protected 1917-1936 (incl.)					Total	* Total W.P. Protected	Areas Planted W.P. Protected
	Total Acres W.P. North Protecting	Regular		FPA	FPA Initial			
		Cooperative	WPA					
Illinois	1,185	295.0	9.0	472.0	195.0	971.0	81.9	9
Indiana	2,682	-	481.5	31.5	626.5	1,139.5	42.5	85
Iowa	2,857	35.0	1,105.0	284.1	273.3	1,697.4	59.4	100
Michigan	545,218	19,174.0	158,239.0	780.0	152,289.5	330,482.5	60.5	1608
Minnesota	807,466	691.0	40,699.0	14,840.0	41,507.0	97,727.0	47.1	2106
Ohio	7,043	2.5	614.0	974.5	1,637.0	3,228.0	45.8	-
Wisconsin	327,050	7,637.0	54,845.0	1,708.0	93,581.0	157,771.0	48.2	18
Reg. Total	1,093,513	27,824.5	255,992.5	19,090.1	290,109.3	593,016.4	54.2	2980

	First	Second	Third	Fourth	Fifth	Sixth	Seventh	Eighth	Ninth	Tenth	Eleventh	Twelfth	Thirteenth	Fourteenth	Fifteenth	Sixteenth	Seventeenth	Eighteenth	Nineteenth	Twentieth	Twenty-first	Twenty-second	Twenty-third	Twenty-fourth	Twenty-fifth	Twenty-sixth	Twenty-seventh	Twenty-eighth	Twenty-ninth	Thirtieth	Total
Illinois	135.0	65.0	160.0	-	-	30.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Indiana	-	354.0	-	-	-	15.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Iowa	-	34.2	-	-	-	1.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Michigan	203.0	14,767.0	6,995.0	-	-	4.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Minnesota	-	1,022.0	8,703.0	80	-	4.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ohio	-	286.0	-	-	-	4.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wisconsin	416.0	4,108.0	7,996.0	-	-	5.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Reg. Total	754.0	20,636.2	23,854.0	80	-	4.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

State	Acres W.P. Protected 1917-1936 (incl.)					Total	Area		
	Total Acres W.P. North Protecting	Regular		FPA	FPA Initial		Total W.P. Protected	Planted W.P. Protected	
		Cooperative	WPA						
Illinois	1,185	295.0	9.0	472.0	195.0	971.0	81.9	9	
Indiana	2,682	-	481.5	31.5	626.5	1,139.5	42.5	85	
Iowa	2,857	35.0	1,105.0	284.1	273.3	1,697.4	59.4	100	
Michigan	545,218	19,174.0	158,239.0	780.0	152,289.5	330,482.5	60.5	1608	
Minnesota	807,466	691.0	40,699.0	14,840.0	41,507.0	97,727.0	47.1	2106	
Ohio	7,043	2.5	614.0	974.5	1,637.0	3,228.0	45.8	-	
Wisconsin	327,050	7,637.0	54,845.0	1,708.0	93,581.0	157,771.0	48.2	18	
Reg. Total	1,093,513	27,824.5	255,992.5	19,090.1	290,109.3	593,016.4	54.2	2980	

Table 17. - Analysis of Ribes Eradication, All Agencies, 1936 by Ribes Eradication Types

Ribes Eradication Type	Number			Percent of Total			Man-Days		Average per Acre		Ave. No. Ribes Pulled per Man-Day
	Acres Worked	Ribes Pulled	Man-Days Labor and Supervision	Acres Worked	Ribes Pulled	Man-Days Labor and Supervision	Man-Days		Average per Acre		
Illinois (Initial Work)											
Upland Crew	44	20,938	67	35.8	98.9	94.6	497	1.98	241		
Scout	79	228	5	64.2	1.1	6.4	3	0.06	45		
Total	123	21,166	72	100.0	100.0	100.0	500	0.75	286		
Indiana (Initial Work)											
Upland Crew	659	34,353	498	11.0	98.0	92.2	52	0.75	69		
Scout	5,312	696	42	89.0	2.0	7.8	None	0.01	17		
Total	5,971	35,059	540	100.0	100.0	100.0	52	0.09	86		
Michigan (Initial and Second Work)											
Lowland Crew	26,732	14,053,545	30,280	10.3	65.9	51.1	526	1.13	464		
Upland Crew	107,643	7,145,504	25,934	41.6	33.5	43.7	66	0.24	276		
Scout	184,257	139,732	3,086	48.1	0.6	5.2	1	0.02	43		
Total	458,632	21,338,781	59,300	100.0	100.0	100.0	593	0.23	783		
Minnesota (Initial Work)											
Lowland Crew	7,302	7,905,815	12,455	7.9	55.0	38.4	1,083	1.71	535		
Upland Crew	33,378	5,978,912	17,541	36.1	42.3	54.1	179	0.53	241		
Scout	51,711	236,588	2,442	55.0	1.7	7.5	5	0.05	97		
Total	92,391	14,121,315	32,438	100.0	100.0	100.0	183	0.25	473		
Ohio (Initial and Second Work)											
Upland Crew	3,887	272,761	4,381	44.2	97.2	83.4	70	1.13	64		
Scout	4,900	5,104	308	55.8	2.2	6.6	1	0.05	20		
Total	8,787	277,865	4,689	100.0	100.0	100.0	71	0.25	84		
Wisconsin (Initial Work)											
Lowland Crew	11,547	7,539,712	12,150	6.6	51.0	29.1	420	1.60	305		
Upland Crew	57,843	12,167,762	40,855	40.7	67.7	55.4	179	0.60	298		
Scout	87,693	230,636	3,400	52.5	1.3	6.6	3	0.04	58		
Total	156,883	19,938,110	56,405	100.0	100.0	100.0	602	0.39	661		
Total (Initial and Second Work)											
Lowland Crew	45,397	27,515,897	60,925	6.3	51.2	36.2	606	1.34	459		
Upland Crew	215,454	25,610,320	92,276	40.1	47.7	55.0	150	0.42	289		
Scout	273,951	607,144	2,523	51.4	1.1	6.8	2	0.03	85		
Total	944,802	33,733,361	155,724	100.0	100.0	100.0	758	0.29	833		

Note: Data on lowe not included, because it was not available in the form lending itself to this type of analysis.

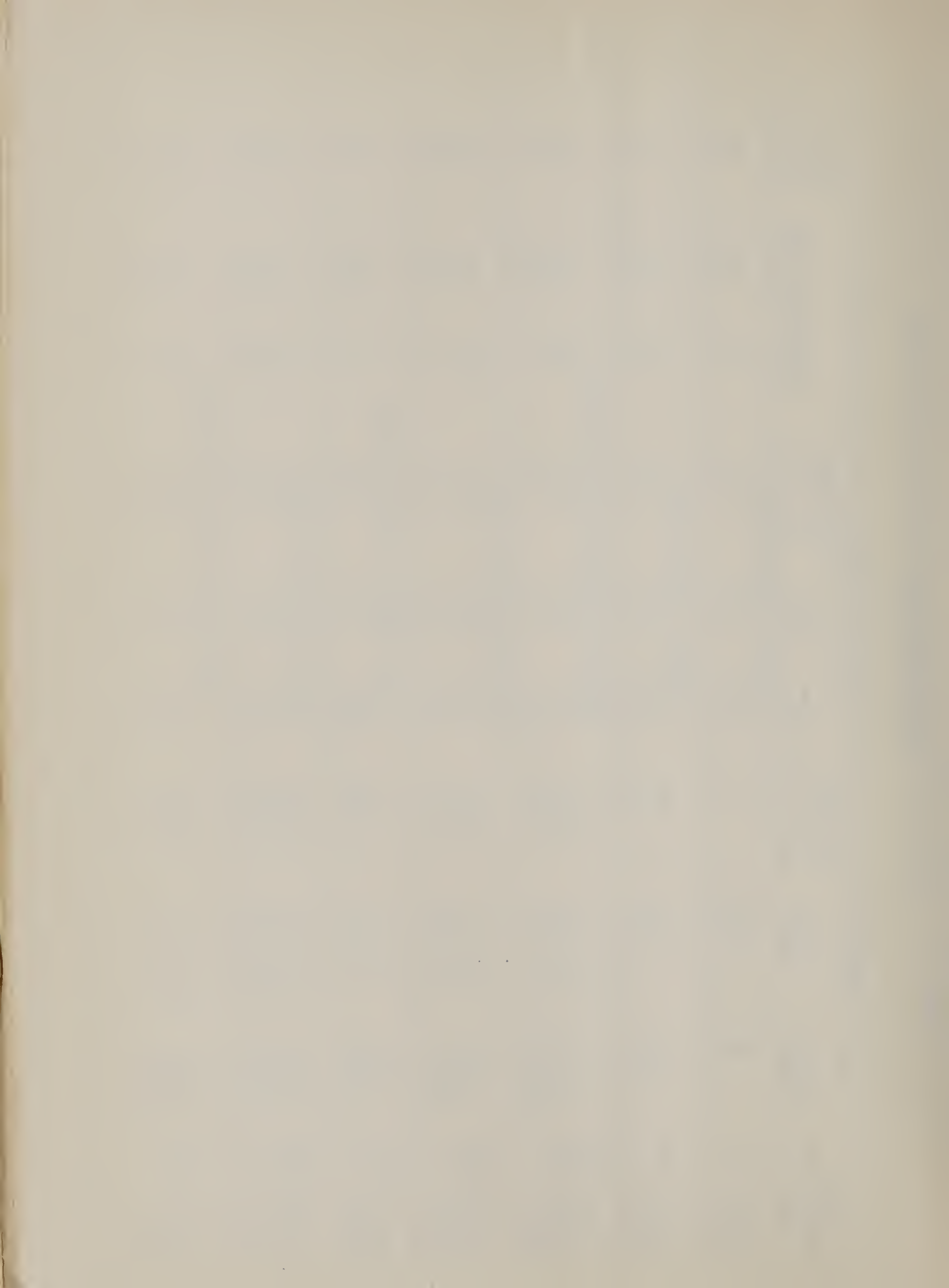


Table 19. - Percent of acres worked and checked according to Hives per acre
clauses remaining after eradication, by eradication type.
North Central Region, 1935.

Stratification Type	Acres Worked and Checked	Ribes F.L.S. per acre classes after eradication					Total
		0. F.L.S. 0.1-6.0 F.L.S.	6.1-15.0 F.L.S.	15.1-25.0 F.L.S.	25.1-50.0 F.L.S.	over 50. F.L.S.	
Lowland Grass	31,695	4.5%	16.3%	37.4%	34.7%	5.2%	100.0%
Upland Grass	137,711	8.3	39.4	39.4	11.0	1.6	100.0
Forest	119,944	50.9	31.6	6.6	0.8	0.1	100.0
Total	269,350	29.7	33.7	25.5	9.4	1.5	100.0

Table 50. - Percent of acres covered in each F.L.D. class which were worked by each of the three eradication methods, North Central Region, 1933.

[illegible]

Table 21. - Special Checking on Late Fall, 1935.
Ribes Eradication, North Central Region.

Ribes Erad. Fall, 1935				Checking Record, Ribes found 1936 after 1935 Eradication				Per Acre after eradication					
Erad. Type	Number of Acres Worked	Ribes Pulled	Total Man-Days	Acres in Check	Missed		Imperfectly Pulled		Total		Eradication Bushes F.L.S.		
					Bushes	F.L.S.	Bushes	F.L.S.	Bushes	F.L.S.			
Iowa													
U.C.	2	70	19,473	101	2.3	331.0	47	114.0	10	2.0	447.0	71.3	194.3
Percent in each class					65.2%	74.1%	28.7%	25.5%	6.1%	0.4%	100.0%		
L.C.	4	154	5,676	381	2.7	737.0	49	101.0	10	18.4	856.4	138.1	317.2
U.C.	4	1,209	228,866	967	6.54	271.9	0	0	6	4.0	275.9	26.3	42.1
Total	8	1,363	234,542	1,348	9.24	1,008.9	49	101.0	16	22.4	1,132.3	59.0	122.3
Percent in each class					88.1%	89.1%	9.0%	8.9%	2.9%	2.0%	100.0%		
Upper Michigan													
L.C.	6	1,053	776,475	2,718	13.2	1,877.0	294	242.0	242	134.0	2,253.0	179.9	170.7
U.C.	5	1,265	105,644	1,082	113.0	1,278.0	170	95.0	8	11.0	1,384.0	21.2	14.2
Total	11	2,318	882,119	3,800	126.2	3,155.0	464	337.0	250	145.0	3,637.0	37.6	28.8
Percent in each class					85.0%	86.7%	9.7%	9.3%	5.3%	4.0%	100.0%		
Minnesota													
L.C.	4	602	664,751	1,008	14.47	1,794.2	23	54.1	52	524.6	2,372.9	26.1	164.0
U.C.	8	917	272,042	582	25.62	867.2	17	34.5	58	111.7	1,013.4	10.8	39.1
Total	12	1,519	936,793	1,590	40.09	2,661.4	40	88.6	110	636.3	3,386.3	15.7	24.8
Percent in each class					77.1%	78.6%	6.1%	2.6%	16.8%	18.8%	100.0%		
Wisconsin													
L.C.	2	215	62,642	279	0.8	100.5	13	27.6	9	7.4	135.5	78.0	168.8
U.C.	3	468	124,576	511	5.7	954.4	18	57.7	14	11.4	1,023.5	86.1	173.2
Total	5	683	187,218	790	6.5	1,054.9	31	85.3	23	18.8	1,159.0	85.1	178.3
Percent in each class					90.3%	91.0%	5.6%	7.4%	4.1%	1.6%	100.0%		
North Central Region													
L.C.	18	4,024	1,509,544	4,386	51.17	4,508.7	379	424.7	313	684.4	5,817.8	102.3	180.1
Percent in each class					78.3%	80.3%	11.9%	7.5%	9.8%	12.2%	100.0%		
U.C.	20	3,949	750,601	3,243	153.16	3,703.5	256	301.2	96	140.1	4,143.8	22.2	27.1
Total	38	7,973	2,260,145	7,629	164.33	8,212.2	635	725.9	409	824.5	9,761.6	36.5	35.0
Percent in each class					84.5%	84.1%	9.4%	7.4%	6.1%	8.3%	100.0%		

Table 22. - Comparison of Late Fall, 1935, Predication with that performed during regular eradication season, 1936. North Central Region.

Area	Glens Destroyed		Man Days Used		F.L.B. per Acre after Eradication		Percent Acres Worked Satisfactorily (Less than 25 F.L.B. per A. 1935 Late 1935)
	1935	1936	1935 Late	1936	1935	1936	
Eradication Area	Late Fall	Eradication	Late	Eradication	Late Fall	Eradication	
Iowa							
Lowland Grass							
Upland Grass	276	197	1.44	1.29	194.5	40.3	80.9
Total	276	197	1.44	1.29	194.5	40.3	80.9
Lower Michigan							
Lowland Grass	39	(a) 295	2.49	1.10	317.2	12.9	89.1
Upland Grass	182	(a) 66	0.80	0.20	42.2	7.0	14.1
Total	172	(a) 138	0.92	0.12	125.5	8.7	12.8
Upper Michigan							
Lowland Grass	737	(a) 335	3.68	1.10	190.7	9.2	0.0
Upland Grass	84	(a) 48	0.86	0.50	12.2	0.5	27.7
Total	351	(a) 126	1.44	0.42	26.8	3.9	15.1
Minnesota							
Lowland Grass	1,104	1,063	1.67	1.71	164.0	12.7	93.1
Upland Grass	297	173	0.25	0.53	39.6	6.0	85.3
Total	617	341	1.03	0.74	84.5	7.4	51.6
Nebraska							
Lowland Grass	851	490	1.20	1.60	168.8	10.0	0.0
Upland Grass	856	179	1.02	0.40	175.6	8.8	9.5
Total	1,744	324	1.16	0.95	198.5	9.1	6.6
North Central Region							
Lowland Grass	746	604	2.17	1.34	180.2	10.6	0.0
Upland Grass	121	150	0.65	0.42	37.1	13.4	31.7
Total	390	205	1.28	0.49	63.0	12.6	20.9

(a) Not given separately for Upper and Lower Michigan. Data for entire state used.

Table 24. - Cultivated Black Currant Eradication
North Central Region, 1936

Initial Eradication

State	Number Counties In Which Work Was Done	Total Inspections	Found		Destroyed		Number Man-days Used	Aver. No. Bushes per Loc.	Aver. No. R. nigrum Loc. per 1000 Inspect.	Number R. nigrum Locations per Man-day
			Locations	Bushes	Locations	Bushes				
Illinois	4	3,000*	119	396	-	-	65	3.3	39.6	1.8
Indiana	1	1,000*	39	215			32	5.5	39.0	1.2
Iowa	22	81,812	350	2,171	261	1,552	1,704	6.2	4.3	0.2
Michigan	16	30,054	634	5,521	628	5,383	1,214	8.7	21.1	0.5
Minnesota	18	50,438	566	2,164	592	2,352	2,770	3.8	11.3	0.2
Ohio	28	679,070	6,116	53,721	5,709	52,275	9,355	8.8	9.0	0.6
Wisconsin	30	210,107	2,865	16,730	2,759	16,147	5,368	5.8	13.6	0.5
Reg. Total	119	1,055,461	10,689	80,918	9,949	77,709	10,508	7.6	10.1	0.5

CBC Recheck

Michigan	29	63,485	491	3,619	493	9,008	2,964	7.3	7.8	0.2
Wisconsin	6	50,000*	52	206	32	206	665	6.4	0.6	Trace
Reg. Total	35	113,485	523	3,825	525	9,214	3,619	7.3	4.6	0.1

* Estimated

Table 25. - Cultivated Black Currant Recheck, North Central Region, 1936.

Original Survey		Found on Recheck, 1936									
		Missed				Planted since			Total on		
		Destroyed		Originally		Seedlings		Sprouts		Recheck	
Year	Com- pleted	Locations	Bushes	Loc.	Bushes	Loc.	Bushes	Loc.	Bushes	Loc.	Bushes
1930	1,706	18,652	159	884	5	74	184	816	17	70	355
1931	76	1,299	26	130			4	9	29	95	59
1932	720	7,037	100	629	2	3	8	17	6	28	118
1933	84	832	25	160			4	10	3	11	52
1934	2,706	21,325	153	1,006	7	436	42	114	9	45	211
Total	5,292	40,145	485	2,809	14	512	242	958	21	249	792
Michigan*											
Wisconsin											
1935	345	2,958	26	167	1	8	2	4	1	13	30
1936	34	326	1	2	1	11	1	1	-	-	3
Total	379	3,284	27	169	2	19	3	5	1	13	33

* Includes recheck done in 1935 and 1936

Table 26. - Cultivated Black Currant Bushes Destroyed in North Central Region 1929-1936 Inc.

State	1929-1935		1936		1929-1936		% Completed	
	Locations	Bushes	Locations	Bushes	Locations	Bushes	Initial	Recheck
Iowa	61	200	261	1,552	322	1,752	75	-
Michigan	9,707	94,942	1,121	14,391	10,828	109,333	100	90*
Minnesota	2,399	19,687	592	2,352	2,991	22,039	100	-
Ohio	468	5,803	5,709	52,275	6,177	58,078	50**	-
Wisconsin	2,018	13,144	2,791	16,353	4,809	29,497	99	85*
Total	14,553	132,776	10,474	86,923	24,127	230,689	90**	74

* Probably the extent of recheck work that will be performed.

** Estimated.

Table 27 - Summary of Blister Rust Control Practices,
North Central Region, 1935

State	Land	No. Areas Treated	No. Trees Examined	No. Trees Treated	No. Trees Removed	No. Cankers Removed	Man-Days Used	Cost
Michigan	WPA	27	14,000	760	0	1,386	57	199.35
Minnesota	WPA	34	157,884	16,080	156	15,679	543	2,347.66
Total (Total)		61	171,884	16,840	156	17,065	600	2,547.01

Table 28 - Summary of Blister Rust Control Practices,
North Central Region,
1919-1936, Invol.

State	Land	No. Areas Treated	No. Trees Examined	No. Trees Treated	No. Trees Removed	No. Cankers Removed	Man-Days Used	Cost
Michigan	WPA	27	14,000	760	0	6,139	195	959.03
Minnesota	WPA	34	157,884	16,080	156	15,679	543	2,347.66
Total (Total)		61	171,884	16,840	156	21,818	738	3,185.59

Table 32. - Expenditures for all Blister Rust Control Projects
in Milwaukee, 1936.

Agency	Expenditure Classification	<u>A</u> Supervision	<u>H</u> Field Data	Totals
Regular	Salaries	\$ 8,952.00	\$ 520.00	\$ 9,472.00
	Expenses	1,151.56	22.01	1,173.57
	Sub-total	10,103.56	542.01	10,645.57
001089	Salaries	5,821.75	500.00	6,321.75
WPA	Expenses	2,371.35	153.80	2,525.15
	Sub-total	8,193.10	653.80	8,846.90
201085	Salaries	3,510.38	1,191.30	4,701.68
WPA	Expenses	1,539.02	833.98	2,373.00
	Sub-total	5,049.40	2,025.28	7,074.68
NYA	Salaries	59.17	-	59.17
Total	Salaries	18,343.30	2,211.30	20,554.60
	Expenses	5,061.93	1,009.79	6,071.72
Totals		\$23,405.23	\$3,221.09	\$26,626.32

Table I.

SUMMARY OF 1936 RIBES ERADICATION

States	1ST. WORKING					2ND. WORKING					3RD. WORKING					TOTALS				Percentage		Per Acre				
	Acreage Worked	No. Ribes Destroyed		Man-Days		Acreage Worked	No. Ribes Destroyed		Man-Days		Acreage Worked	No. Ribes Destroyed		Man-Days		Acreage Worked	No. Ribes Destroyed		Man-Days		Acre. Wkd.		Ribes		Man-Days (8 hr)	
		Wild	Cult.	Actual	8-Hour		Wild	Cult.	Actual	8-Hour		Wild	Cult.	Actual	8-Hour		Wild	Cult.	Actual	8-Hour	1st	2nd	1st	2nd	1st	2nd
Illinois	123	21,226	-	92	92	1,778	284,368	-	1,215	1,146						1,901	305,594	-	1,307	1,238	6.5	93.5	173	160	0.75	0.64
Indiana	5,971	35,059	-	540	534	1,828	18,462	-	419	419						7,799	53,521	-	959	953	76.6	23.4	6	10	0.09	0.23
Iowa	108,955	1,083,569	12,219	7,075	6,942	5,240	15,188	153	148	148						109,195	1,098,757	12,372	7,223	7,090	95.2	4.8	11	3	0.07	0.03
Michigan	242,932	18,220,159	-	55,666	54,372	24,140	1,362,188	-	6,644	6,052						267,072	19,582,347	-	62,310	60,424	91.0	9.0	75	59	0.22	0.25
Minnesota	92,391	15,003,939	-	34,713	34,713	13,709	809,214	-	4,617	4,617						106,100	15,813,153	-	39,330	39,330	87.1	12.9	162	59	0.38	0.34
Ohio	6,664	225,080	-	3,994	3,549	1,133	53,805	-	695	695						7,997	278,885	-	4,689	4,244	85.8	14.2	33	47	0.52	0.61
Wisconsin	175,978	20,375,151	8,839	72,556	66,556	8,498	211,446	168	2,524	1,983	90	1,268	-	31	23	184,566	20,587,865	9,007	75,111	68,562	95.4	4.6	116	25	0.38	0.23

Table II.

SUMMARY OF 1936 RIBES ERADICATION BY PROGRAMS
(Including all work - 1st, 2nd and 3rd workings)

States	Total Acreage Worked 1st, 2nd & 3rd	REGULAR AND COOPERATIVE (a)					W. P. A. AND E. R. A.					E. C. W.					TOTAL EMERGENCY PROGRAMS (W.P.A. - E.C.W. - P.W.A.)					
		Acreage Worked	No. Ribes Destroyed		Man-Days		Acreage Worked	No. Ribes Destroyed		Man-Days		Acreage Worked	No. Ribes Destroyed		Man-Days		P.W.A. OR (NRA)	Acreage Worked	No. Ribes Destroyed		Man-Days	
			Wild	Cult.	Actual	8-Hour		Wild	Cult.	Actual	8-Hour		Wild	Cult.	Actual	8-Hour			Wild	Cult.	Actual	8-Hour
Illinois	1,901	mop-up	1,000	-	12	12	1,901	281,017	-	997	997	mop-up	23,577		298	229		1,901	304,594	-	1,295	1,238
Indiana	7,799	-	-	-	-	-	7,648	52,491	-	931	931	151	1,030		28	22	No Work in	7,799	53,521	-	959	953
Iowa	109,195	200	22,300	0	153	153	108,450	1,046,483	12,372	6,539 (b)	6,539	545	29,974	0	531	398	1936	108,995	1,076,457	12,372	7,070	6,937
Michigan	267,072	2,368	106,480		838	838	235,148	18,455,241	-	53,502	53,502	29,556	1,020,626	-	7,970	6,084		264,704	19,475,867	-	61,472	59,585
Minnesota	106,100		-				78,775	14,441,394	-	30,678	30,678	27,325	1,371,759		8,652	8,652		106,100	15,813,153	-	39,330	39,330
Ohio	7,997	900	4,932		77	77	6,072	177,195		2,710	2,710	1,025	96,758		1,902	1,457		7,097	273,953	-	4,612	4,167
Wisconsin	184,566						134,048	15,782,872	8,701	47,581	47,581	50,518	4,804,993	306	27,530	20,981		184,566	20,587,865	9,007	75,111	68,562
TOTAL	524,123	3,468	121,712																			
Percentage of Total Acreage Worked							83.6					15.9								99.5		
* 2 W. P. A. personnel work 6 hours per day.																						

Note: All days worked except under E.C.W. considered as 8-hour days. E.C.W. enrollees work 6 hours per day. In converting to an eight hour day, the total enrollee man days was multiplied by 3/4. The states, with exception of Minnesota, showed in the annual reports actual man days. In Minnesota all man days were converted to eight hour man days in the annual report.

(a) Include Soil Conservation Service and Agricultural Resettlement Administration with Regular and Cooperative.
(b) Includes 120 days of owners' labor, and 141 man days regular supervision.

District	Estimated Total Income (KSh)								Total
	Household Income	Business Income	Government Income	Other Income	Transfer Income	Gift Income	Interest Income	Dividend Income	
District 1	1,200	120	50	100	20	50	20	10	1,550
District 2	1,500	150	60	120	30	60	30	15	1,935
District 3	1,800	180	70	150	40	70	40	20	2,330
District 4	2,100	210	80	180	50	80	50	25	2,745
District 5	2,400	240	90	210	60	90	60	30	3,150
District 6	2,700	270	100	240	70	100	70	35	3,555
District 7	3,000	300	110	270	80	110	80	40	3,960
District 8	3,300	330	120	300	90	120	90	45	4,365
District 9	3,600	360	130	330	100	130	100	50	4,770
District 10	3,900	390	140	360	110	140	110	55	5,175
Total	21,000	2,100	800	1,800	500	800	500	250	27,850

* Estimated

District	Total Income (KSh)			Total Expenditure (KSh)		
	Household Income	Business Income	Government Income	Household Expenditure	Business Expenditure	Government Expenditure
District 1	1,200	120	50	1,100	100	40
District 2	1,500	150	60	1,400	120	50
District 3	1,800	180	70	1,700	140	60
District 4	2,100	210	80	2,000	160	70
District 5	2,400	240	90	2,300	180	80
District 6	2,700	270	100	2,600	200	90
District 7	3,000	300	110	2,900	220	100
District 8	3,300	330	120	3,200	240	110
District 9	3,600	360	130	3,500	260	120
District 10	3,900	390	140	3,800	280	130
Total	21,000	2,100	800	20,000	1,800	700

(a) Districts Soil Conservation & Agricultural Development Administration

District	Estimated Total Income (KSh)								Total
	Household Income	Business Income	Government Income	Other Income	Transfer Income	Gift Income	Interest Income	Dividend Income	
District 1	1,200	120	50	100	20	50	20	10	1,550
District 2	1,500	150	60	120	30	60	30	15	1,935
District 3	1,800	180	70	150	40	70	40	20	2,330
District 4	2,100	210	80	180	50	80	50	25	2,745
District 5	2,400	240	90	210	60	90	60	30	3,150
District 6	2,700	270	100	240	70	100	70	35	3,555
District 7	3,000	300	110	270	80	110	80	40	3,960
District 8	3,300	330	120	300	90	120	90	45	4,365
District 9	3,600	360	130	330	100	130	100	50	4,770
District 10	3,900	390	140	360	110	140	110	55	5,175
Total	21,000	2,100	800	1,800	500	800	500	250	27,850

District	Total Income (KSh)			Total Expenditure (KSh)		
	Household Income	Business Income	Government Income	Household Expenditure	Business Expenditure	Government Expenditure
District 1	1,200	120	50	1,100	100	40
District 2	1,500	150	60	1,400	120	50
District 3	1,800	180	70	1,700	140	60
District 4	2,100	210	80	2,000	160	70
District 5	2,400	240	90	2,300	180	80
District 6	2,700	270	100	2,600	200	90
District 7	3,000	300	110	2,900	220	100
District 8	3,300	330	120	3,200	240	110
District 9	3,600	360	130	3,500	260	120
District 10	3,900	390	140	3,800	280	130
Total	21,000	2,100	800	20,000	1,800	700

(b) Districts Soil Conservation & Agricultural Development Administration

1900					
Month	Jan	Feb	Mar	Apr	May
1900	100	100	100	100	100
1901	100	100	100	100	100
1902	100	100	100	100	100
1903	100	100	100	100	100
1904	100	100	100	100	100
1905	100	100	100	100	100
1906	100	100	100	100	100
1907	100	100	100	100	100
1908	100	100	100	100	100
1909	100	100	100	100	100
1910	100	100	100	100	100

1910

1910					
Month	Jan	Feb	Mar	Apr	May
1910	100	100	100	100	100
1911	100	100	100	100	100
1912	100	100	100	100	100
1913	100	100	100	100	100
1914	100	100	100	100	100
1915	100	100	100	100	100
1916	100	100	100	100	100
1917	100	100	100	100	100
1918	100	100	100	100	100
1919	100	100	100	100	100
1920	100	100	100	100	100

1920

1920					
Month	Jan	Feb	Mar	Apr	May
1920	100	100	100	100	100
1921	100	100	100	100	100
1922	100	100	100	100	100
1923	100	100	100	100	100
1924	100	100	100	100	100
1925	100	100	100	100	100
1926	100	100	100	100	100
1927	100	100	100	100	100
1928	100	100	100	100	100
1929	100	100	100	100	100
1930	100	100	100	100	100

1930

1930					
Month	Jan	Feb	Mar	Apr	May
1930	100	100	100	100	100
1931	100	100	100	100	100
1932	100	100	100	100	100
1933	100	100	100	100	100
1934	100	100	100	100	100
1935	100	100	100	100	100
1936	100	100	100	100	100
1937	100	100	100	100	100
1938	100	100	100	100	100
1939	100	100	100	100	100
1940	100	100	100	100	100

1940

Table V.

Summary of E.C.W. Participation in the Forto Central Region Local Control Program

According to E.C.W. Agency by States and Years

1933-1936 Inc.

State	Year	No. Camps Doing Work	Peak Load of Men Engaged	Acres		Acres Worked	Ribes Destroyed	Total Actual		Total Cost
				W. P. Protected	P. H. Acres			Man-Days Used		
State - E.C.W.										
Michigan	1933	16	300 *	14,272		53,920	2,201,045	7,328		\$ 11,535.59
	1934	25	577	51,008		133,980	9,030,034	31,490		39,950.19
	1935	26	532	45,142		101,246	5,277,273	32,950		42,250.71
	1936	6	110	6,073		11,796	515,708	3,403		5,061.00
State Total										
Wisconsin	1933	13	300 *	11,990		36,109	1,237,518	9,945		23,032.71
	1934	15	342	16,101	643	54,910	4,448,039	25,584		71,832.32
	1935	17	370	24,553	35	76,810	3,996,134	26,010		47,472.89
	1936	15	125	7,034	18	30,443	1,179,020	10,783		20,635.93
State Total										
Minnesota	1933	6	80 *	369		5,927	376,063	1,806		2,535.23
	1934	8	118	4,581		3,417	1,325,661	4,425		13,514.37
	1935	5	88	4,001		6,146	702,194	3,636		5,083.11
	1936	11	99	5,772		11,956	268,616	3,418		5,458.09
State Total										
Iowa	1933	1	40 *	91		1,608	21,856	441		1,117.00
	1934	1	42	114	100	1,068	295,435	3,046		10,109.00
State Total										
Indiana	1933	3	24	323		1,512	18,303	322		556.00
	1934	2	15	154	5	1,549	15,030	629		677.96
	1936	1	12	5		151	1,030	25		24.00
	State Total									
Ohio	1933	1	26	239		366	37,472	1,105		1,337.76
	1934	2	27	813		2,812	106,303	2,117		3,274.81
	1935	1	26	345		2,431	38,143	1,042		6,833.00
	1936	1	12	152		1,025	25,770	1,308		1,733.82
State Total										
Region Total (1933-1936)	1933	40	770	17,534		37,472	37,472	1,105		1,337.76
	1934	51	1,151	78,601		2,812	106,303	2,117		3,274.81
	1935	49	1,016	98,041		2,431	38,143	1,042		6,833.00
	1936	34	134	19,039		1,025	25,770	1,308		1,733.82
State Total										
Illinois	1933	2	26	247		1,050	232,464	915		1,243.14
	1934	1	13	-		283	30,300	153		109.80
	1936	1	14	-		-	23,577	282		710.14
	State Total									
State Total	1933	3	12	347	103	449	9,012	155		203.45
	1934	1	15	123	515	29,974	29,974	331		1,113.30
	1935	1	15	123	515	29,974	29,974	331		1,113.30
	1936	1	15	123	515	29,974	29,974	331		1,113.30
State Total										
Region	1933	13	238	3,018	125	5,900	369,149	3,070		3,387.24
	1934	13	238	3,018	125	5,900	369,149	3,070		3,387.24
	1935	13	238	3,018	125	5,900	369,149	3,070		3,387.24
	1936	13	238	3,018	125	5,900	369,149	3,070		3,387.24
State Total										
Total	1933	8	104	8,477	155	1,050	232,464	915		1,243.14
	1934	8	104	8,477	155	1,050	232,464	915		1,243.14
	1935	8	104	8,477	155	1,050	232,464	915		1,243.14
	1936	8	104	8,477	155	1,050	232,464	915		1,243.14
State Total										
Total	1933	2	175 *	7,859		15,447	1,573,991	4,671		12,608.24
	1934	3	243	5,806		15,090	2,984,729	11,462		27,735.21
	1935	2	210	3,548		7,838	5,792,967	12,756		33,747.45
	1936	2	115	2,683		4,356	2,397,259	7,072		11,437.75
State Total										
State Total	1933	2	100 *	1,948		2,845	471,649	1,224		3,514.53
	1934	3	135	9,362		12,809	4,483,166	7,173		19,434.36
	1935	1	134	1,009		2,227	1,198,468	1,946		3,372.38
	1936	2	88	7,607		6,594	783,452	3,410		8,383.25
State Total										
Iowa	1934	1	7	10		206	2,980	58		145.90
	1935	1	190	9,607		18,235	1,043,240	6,903		15,025.86
	1936	1	190	9,607		18,235	1,043,240	6,903		15,025.86
	1937	1	190	9,607		18,235	1,043,240	6,903		15,025.86
State Total										
Region	1934	1	7	10		206	2,980	58		145.90
	1935	1	190	9,607		18,235	1,043,240	6,903		15,025.86
	1936	1	190	9,607		18,235	1,043,240	6,903		15,025.86
	1937	1	190	9,607		18,235	1,043,240	6,903		15,025.86
State Total										
Total	1934	1	7	10		206	2,980	58		145.90
	1935	1	190	9,607		18,235	1,043,240	6,903		15,025.86
	1936	1	190	9,607		18,235	1,043,240	6,903		15,025.86
	1937	1	190	9,607		18,235	1,043,240	6,903		15,025.86
State Total										

* Estimated

Table V. (Continued)

quantity of S.O.M. participation in the North Central Social Control Project.

According to E.C.C., Assembly by Electric and Trench

1958-1959

Total 21 3.0.3. by Tour

1870

Year	1933	1934	1935	1936
...

1891

955-2

10

STUDIES IN EFFECTIVENESS OF CONTROL MEASURES

Introduction

During 1939 studies initiated in 1935 on the effectiveness of the White Pine Blister Rust Control program have been continued and expanded. In general these studies may be divided into two major groups:

- (1) Pine Infection Study Plots, and
- (2) Ribes Regeneration Study Plots.

Pine Infection Study Plots are established on areas where the white pine blister rust disease is present in varying amounts (on Pinus Strobus L.) and where Ribes eradication has been or may be performed in the future. The purpose for establishment of Pine Study Plots is to study the effect of Ribes eradication on the reduction of cankers and damage to the pine stands. In general, with respect to Ribes density, three types of Pine Study Plots are established when conditions permit.

The first type is that of Pine Study Plots where Ribes eradication has been performed and where there are some or but relatively few missed bushes or regeneration from crowns, stems, or seedlings present. On such plots a Ribes count is taken and the area used as a Ribes Regeneration Study as well as correlating it with the pine infection. These plots are also valuable in determining when the center of bushes and feet of live stem become adequate to again cause and intensify pine infection. On these plots an attempt is always made to arrive at an estimation of the original Ribes density as accurately as possible. Also the rate of progress of the disease necessarily must be found out by determining the probable year of canker origin, that is, the probable year of growth at the canker center. In such a manner the history of the progress of the disease, under the particular ecologic conditions of the area, may be reconstructed approximately as it occurred. The effectiveness of Ribes eradication may most readily be determined from a plot study of this type.

The second type of Pine Study Plot is one where Ribes eradication has not been performed and where it is delayed for some seasons in order to secure in subsequent years the normal intensification of the blister rust disease and to thus secure more directly the history of pine infection and its normal progress. Such studies give a record of the influence of certain Ribes densities on pine infection and serve as a check on Study Plots where Ribes eradication has been performed. A study of the ecologic conditions as Ribes increase or decrease is also obtained.

The third type of Pine Infection Study Plot is one where a study has been made of the existing pine infection and the Ribes density, after which initial Ribes eradication is performed and where the Study Plot thus constitutes, as in the first type, a typical Ribes Regeneration Study Plot as well as a Pine Infection Study Plot.

Where all three types of Study Plots can be established under similar ecologic conditions, they function as excellent checks on each other and will assist in bringing out the effectiveness of Ribes eradication as a control measure. In all cases of Pine Study Plots, it is as essential to study the accompanying Ribes situation as it is to study the amount

and degree of pine infection.

Variations of the three above mentioned types of Pine Infection Study Plots may be secured by selecting locations where one or another species of Ribes is chiefly responsible for the introduction and intensification or the intensification alone of Blister Rust in that area, where one or another ecological type predominates (swamp or upland), or where the amount of pine infection or density of Ribes involved vary from a small to a large amount. These one Study Plot may show the effect of a great density or a small density of a certain species of Ribes on pine infection where a large or small amount of pine infection appears. Certain Study Plots may then give data relative to the effect of certain swamp species of Ribes on white pine infection. Two such Study Plots primarily involving the influence of swamp Ribes on pine infection have been established in the North Central Region.

Permanent Ribes Regeneration Study Plots are established for the purpose of studying the effect of Ribes eradication control measures on Ribes survival, regeneration and subsequent density. Besides this is important relative to potential pine infection and the timing of subsequent eradication programs. A second Ribes eradication to be most timely and effective should be performed after the Ribes concentration has become more or less established following first eradication, bushes plainly visible, and before such bushes have produced seeds.

During the normal operations of performing the control measure, namely, Ribes eradication, certain bushes will be missed, imperfectly pulled, or stems or stumps left which later may continue growth or regenerate. A crew walking through, stirring up the forest duff and pulling bushes, brings about Ribes seeds to or near the surface or under such conditions that they may germinate in great quantity. These Ribes Regeneration Study Plots give us quantitative data upon which to base the time most effective for second Ribes eradication. The Ribes Regeneration Study Plots are established before Ribes eradication and in such a manner as to be unknown to eradication crews in order that a sample of typical area work may be secured. Shortly after Ribes eradication has been performed (the same year) data are taken on the number of bushes and feet of live stem of the various species of Ribes present on the Study Plot and this is followed by subsequent annual inspections where this is feasible.

Ribes Regeneration Study Plots may be separated on the basis of the Ribes-Type (See 1936 Report) in which they are established. Ribes Regeneration Study Plots have been established in Ribes Type-A (swamp) Ribes Type-B (marshy swamp), Ribes Type-C (upland hardwood), and Ribes Type-D (upland pine). (See 1936 Report on Permanent Ribes Regeneration Study Plots).

Procedure in Establishment of Plots

The procedure used in establishing and studying both Pine Infection and Ribes Regeneration Study Plots was outlined in the 1936 Report on these plots and quoted in the Annual Report of Blister Rust Control in the North Central Region, 1938 by Hansen, Peterson and Franklin (See pp. 33-70).

With but slight modifications the same procedure (as outlined in 1950) was followed in 1955. In taking Ribes data on areas around Pine Infestation Study Plots as at the Bow Hope Study Plot, the Detroit Lakes Study Plot, and the Olaf Stoen Study Plot, a record was made of Ribes present on each quarter chain. A square chain map (5 inches square) marked off in miles was used by drawing two lines dividing the map in quarters (See Form I). The Quarters were labelled A and B and the distances I and II in red pencil making possible the location of each quarter square chain (See Form I). For every quarter of the Study Plot from the St. O. Tr. O. stake the data from each square chain was recorded in the same sequence in order to properly locate the Ribes data on the Study Plot Map. The Study Plot maps were all drawn to the scale of 1 inch for 1 chain length (66 feet) and each subdivided into quarter square chains. The Ribes data for each quarter square chain around the Pine Study Plot has been inserted on these maps; the numerator being the number of bushes and the denominator the feet of live stem (a P.L.F.). The name of the dominant Ribes species is not given on each square chain but all other Ribes species are indicated by an appropriate abbreviation. Ribes-type lines are also given and the appropriate Ribes-type labelled on the various areas so circumscribed. The Pine Study Plot maps have the tree data given on the right half of the square chains studied in the following sequence from top to bottom: (1) Infested trees, (2) Trees dead from blister rust, (3) Trees dead from other cause, (4) Trees without blister rust numbers, (5) Total trees examined on the square chain, (6) Trees too high to examine. Ribes data were taken for every mile on the area studied for pine, and this information is summarized and placed on the left half of the square chain studied, with the total number of bushes as numerator and the total feet of live stem as denominator.

In taking Ribes data around Pine Infestation Study Plots, a crew of four was walked across the quarter chain and called off the number of bushes and feet of live stem as they located the Ribes. Another man (fifth) recorded the Ribes data for the entire crew. The leader of the crew would indicate to the man recording when one quarter-square chain was completed and another quarter began. In cases where Ribes eradication had not been performed previously on the area under study, as the Olaf Stoen Pine Infestation Study Plot, the "Ribes Inspection" form given in the 1955 Report (p. 48) was used but in other cases, as the Bow Hope or the Detroit Lakes Pine Infestation Study Plots, where initial Ribes eradication had been performed previously, this Ribes Inspection sheet was not appropriate and a new form was devised (Form II). This new form included such items as the number and feet of live stem of (1) mixed bushes, (2) imperfectly pulled bushes, (3) pulled bushes re-sprouted, (4) Sprouts from stumps and (5) Seedlings.

In collecting men for crews to gather the Ribes data, those men who had demonstrated a sharp eye for Ribes were chosen. Generally a leader of known proficiency in seeing Ribes and handling men was available. It is believed that quite accurate records of Ribes present were obtained. Each Study Plot, while laid out primarily with relation to pine infection, constitutes also large Ribes Regeneration Study Plots (in cases where Ribes eradication is performed) and in this way supplements the smaller regular Ribes Regeneration Study Plots.

Another item to be considered in relation to the techniques employed in studying data obtained on the pine infestation Study Plots is that of Composite Tables or Summaries. The need for such Composite Summaries appears when data on a particular pine Study Plot are taken for more than one year and is generally made necessary by the death from blister rust

FORM I

_____ PINE INFECTION STUDY PLOT

T. _____, R. _____, Sec. _____ "40" _____

County _____ Township _____

Owner: _____ Address: _____

Strip _____ Transect _____

	A	B	A	C	D	E	F	G	H	B	I	J	
I													I
													II
													III
													IV
													V
II													VI
													VII
													VIII
													IX
													X

Ribes type: _____ Mapped by _____

Legend

Date Mapped _____

White pine designated by tree number.

Ribes species designated by first or first and second letters of species name.

Location to square milacre designated by coordinates:

Abscissa by capital letters - Ordinates by Roman numerals.

Scale : 5 inches = 1 chain.

Inspection record on glass substituted areas

FORM II

Date of issue: _____

Location: _____

Name of owner: _____

Date issued: _____

Inspected by: _____

Address: _____

County: _____

State: _____

City: _____

Zip: _____

Estimated cost: _____

Estimated time: _____

Estimated date: _____

Estimated value: _____

Estimated weight: _____

Estimated length: _____

Estimated width: _____

Estimated height: _____

Estimated volume: _____

Estimated area: _____

Estimated perimeter: _____

Estimated surface: _____

Estimated volume: _____

of a certain number of trees.

When taking data in the field it is necessary to record the amount, stage of development, and year of growth at the center of the canker from living trees in order to "date" the cankers accurately. For that reason when establishing a Study Plot it is impossible to "date" cankers on those trees already killed by Blister Rust and, also, for this reason, in order to make the most complete record of Blister Rust infection in any area the Study Plot should be established before any white pine have been killed by the pathogen. However, in future years a record of the time the trees die from Blister Rust and the previous canker history available from previous records make possible a more complete history of white pine infection in that area, and the total trees ever becoming infected and the approximate number of cankers developed may be reconstructed from the several yearly records.

Such a reconstructed history or composite of tree infection and canker development will not be, necessarily, a complete picture in many cases because it is possible for cankers to develop during the year intervening between the last record of the living tree and the year tree death is recorded, but it is approximately correct and far more accurate and complete than to merely use the last year's record as the total amount of infection on a Pine Study Plot. Without reconstructing or accumulating the several years' records of the Study Plot there appear in many cases trees with a fewer number of infections on a given year's growth in succeeding years than previously reported, whereas, it is possible and more probable that, if cankers on "killed trees" are included, there is a decided increase.

In the case of the New Hope Pine Infection Study Plot, 2,776 cankers were reported on living trees in 1936. 2,520 cankers were reported on living trees in 1935, but during the year 170 white pine trees had been killed by Blister Rust. The 1935 records showed that there had previously been recorded on these 170 "killed trees" 841 cankers, so that at least 4,561 cankers were known to have developed on the Study Plot. Of course in addition to these cankers a certain number had developed on those 10 trees "killed" prior to the establishment of the Study Plot, but at this time it is impossible to determine all of these cankers.

In this connection the question arises as to what percentage of the infections, which will result in cankers on the first, second, third, etc. year's growth prior to any particular year of inspection, may be recognized. An indication of the answer to this question may be seen in Table 7 columns (q) and (r) of the New Hope Pine Infection Study Plot Report for 1936. From this, it appears that about 60% of the cankers on the last year's growth prior to year of inspection, and about 70% of the cankers on the two and three year's growth may be recognized. It is probable that approximately 100% of the cankers may be recognized on any growth older than the third year from time of inspection.

Occasionally trees with one or few cankers may have their infected branches broken or cut off, after which they may appear without cankers and healthy. This is especially true in areas pastured to cattle where frequently considerable cattle injury may be found. If a source of inoculum is available, these same trees may become reinfected but unless individual canker records are kept, such cases are a source of inaccuracy in compiling the history of the Study Plot.

A detailed report on each Study Plot established or continued from preceding year's study is on file in Washington and Milwaukee. Reports on plots established in the various states are also filed in the respective State Leaders' Offices.

A brief summary of data on work with White Pine Blister Rust Infection Study Plots and Permanent Ribes Regeneration Study Plots as carried on in the North Central Region during the season of 1936 follows.

White Pine Blister Rust Infection Study Plots North Central Region

In 1936 four Pine Infection Study Plots were studied in Upper Michigan, three in Lower Michigan and one in Wisconsin, making a total of eight Pine Infection Study Plots studied within the North Central Region.

In 1936 two only of the four Pine Infection Study Plots in Upper Michigan and none in Lower Michigan were studied. The Pine Study Plots omitted were those upon which it was believed a two year record would be approximately as complete as an annual record. It is expected to study part or all of those Pine Study Plots during the summer of 1937. Also in 1936 the one Pine Study Plot in Wisconsin was enlarged and three more added, making four Pine Infection Study Plots in Wisconsin. Also four Pine Infection Study Plots were established in Minnesota in 1936.

Table I and Charts IV, V, VI and VII give the general items regarding the ten Pine Infection Study Plots studied in the North Central Region in 1936. A total of 7,471 white pine trees was examined, of which an average of 30.8% was infected with Blister Rust, 7.8% was killed by Blister Rust, making a total of 40.8% affected with Blister Rust. The earliest year's growth observed to be affected with Blister Rust in Upper Michigan was 1922, in Wisconsin, 1920, and in Minnesota, 1918, the earliest observed on Study Plots in the Region.

In 1936 a study was made of the Ribes density around certain Pine Infection Study Plots. On the ten Pine Infection Study Plots, white-pine infection was studied on 11 acres and Ribes density on 78.8 acres. Because of deep snow on certain of the Pine Study Plots (Portage Lake and Milawa) Ribes data were not taken at the time of establishment but will be taken during 1937.

Ribes nigrum and Ribes cynosbati appear to be the chief species of Ribes intruding and intensifying White Pine Blister Rust in the Region.

A total of 9,589 cankers is reported on the ten Pine Infection Study Plots, which gives an average of 4.7 cankers per infected tree and 1.34 cankers per examined tree.

Table II and Charts I, II, III, and IV give a summary of trees arranged according to the year's growth first affected. According to 1936 data the years 1925, 1927 and 1933 were years of heavy infection in Upper Michigan, 1926 and 1933 in Wisconsin, and 1922, 1925, 1927, 1930-1932 in Minnesota.

For the entire North Central Region the outstanding years of heavy Blister Rust infection appear to be 1927 and 1933. In this connection, due regard must be given to the fact that in both Study Plots in Upper Michigan, two plots in Wisconsin and one plot in Minnesota, Ribes

eradication had been performed and this eradication has influenced the progress of the infection.

That the progress of Blister Rust on pine has been affected by Ribes eradication is evident from the data presented in Table I, (column (g)) where a 100% or absolute control of Blister Rust is achieved in every case where all Ribes have been eradicated. Only in the Chief Station and Horseshoe Lake Plots where cultivated Ribes alone were removed has any infection continued after Ribes eradication. But even in these two cases, in which many Ribes were involved, only a small amount of white pine infection continued, showing that the cultivated Ribes were the chief source of the inoculum.

Both the 1935 and the 1936 data show that in all cases where an eradication of all Ribes has been performed, no trees previously uninfected have become infected.

In other words, Ribes eradication for the period studied, even when a small amount of bushes and feet of live stem was left, gave 100% or absolute control of white pine Blister Rust, a control more perfect than is commonly secured with most standard control methods used against plant pathogens or insect pests, in which in most cases the best that may be expected is a practical or economic control rather than an absolute control.

MICHIGAN

In the Calvert and Chief Station Pine Infection Study Plots in Upper Michigan, a total of 221 trees was reported (Table II). Two trees were missing in 1936, leaving 220 trees examined, of which 123 or 56.4% were infected, 89 or 40.5% were killed by Blister Rust, making a total of 167 or 76.4% affected with Blister Rust, 4 or 1.8% were dead from some other cause, and 49 or 22.3% did not show symptoms of the Blister Rust disease.

Rate of Damage in Young Pines

The Calvert Pine Study Plot is of special interest because this is a roadside planting consisting of young trees of approximately the same age planted in 1930 by the Ioshtan County Highway Department. Supposedly these pinegrove not exposed to infection until planted in the vicinity of cultivated European black currants in 1930. From the records taken in 1934, 1935 and 1936, a composite tree and checker survey has been prepared (Table V and Chart III).

Of the 106 examined white pine trees, 89 or 84% have become infected during the history of this Study Plot. Two white pine trees or 1.9% had been killed by Blister Rust prior to the establishment of the Study Plot. One tree or 0.9% was dead from some other cause, and 14 trees or 13.2% did not show symptoms of Blister Rust. The initial eradication of cultivated European black currants (*R. nigra*) was performed in the fall of 1934. No eradication of wild Ribes had been performed, but there were very few wild Ribes within infecting distances. No additional trees have become infected since the cultivated Ribes eradication in 1934, and thus it is evident that during the four year exposure to inoculum (1930-1934) from the cultivated black currants, 91 or 86.8% of the trees became infected. Of these 91 trees, 14 or 15.5% of total trees had been killed by Blister Rust by 1936.

Had *Ribes* eradication not been performed, no doubt 100% of the trees would be infected and many more killed from Blister Rust before 1935, which is relatively rapid progress for Blister Rust, since records (See 1935 Report, p. 9) have shown that commonly 50% of the trees may be expected to become infected in five years after 1% infection has been attained.

At the Galvest Study Plot, however, the unusual amount of inoculum from *R. nigrum*, an especially dangerous alternate host of the pathogen, particularly favorable environmental conditions for infection and development of the pathogen, and uniformly aged young white pine susceptible appear to have assisted in producing a rapid progress and intensification of the Blister Rust disease on white pine.

WISCONSIN

In the four Wisconsin Pine Study Plots (New Hope, Garfield, Rhineland, and Charles Reese) a total of 5,759 trees was examined, of which 1,759 or 30% were infected, 424 or 7.3% were killed by Blister Rust, making a total of 2,183 or 37.6% trees affected with Blister Rust. 161 or 2.8% trees were reported dead from some other cause, and 1,372 or 23.7% trees did not show symptoms of Blister Rust.

In addition to the above trees, there were 134 white pine trees on the Wisconsin Pine Study Plots which were too high to examine.

The earliest white pine growth found infected on the four Wisconsin Pine Study Plots was that of 1920. A total of 7,453 Blister Rust cankers was found on the above mentioned infected white pine in Wisconsin. Of this number of cankers, 1,636 or 21.9% had killed the affected susceptible organ beyond the canker and in this manner formed "flags." The average numbers of cankers per infected tree and per examined tree on the four Wisconsin Pine Study Plots are, respectively, 4.5 and 2.0. Wood of 1924 year's growth has the greatest number of cankers (3,273 cankers), with that of 1933 a relatively close second (3,337 cankers).

Development of Waves of Pine Infection

Ribes eradication had been performed on two of the Wisconsin Pine Study Plots (New Hope and Charles Reese) and this accounts for the sudden decline in number of cankers after 1934 (Table III and Charts IV and V). *Ribes* eradication has not been performed on the Garfield and Rhineland Pine Study Plots. These two Study Plots, together with other Pine Infection Study Plots located in areas within which *Ribes* eradication has not been performed (Portage Lake, Illinois) are of value in studying the occurrence and natural development of waves of Blister Rust infection.

Using the Garfield data as illustration, we find that pine infection first appears on 1920 stem growth and that for several years (until 1924) there was little or no increase in the amount of the infection (Table III, Chart II). In the case of the eastern white pine (*Pinus strobus* L.) the year's growth of greatest number of infections indicates the year the majority of the infections took place on the tree growth.

Therefore, in a perusal of data taken in 1935 on the Garfield Pine Study Plot, a more rapid increase in the amount of Blister Rust infection

began in 1936, with the first peak of an infection wave appearing in 1939. The amount of infection diminished between 1939 and 1943, after which there again appears a rapid increase with the peak of the next wave in 1944. It is probable that the extreme drought of the summer of 1943 will greatly influence the amount of infection on both 1945 and 1946 growth and that there will appear in future recordings a decline in the amount of infections beginning with 1945 year's growth. Records of tree infection and the total number of cankers paralleled each other in these trends.

The Rhineland Pine Infection Study Plot shows a gradual increase of infection with the peak in 1933.

On the Milaca Pine Infection Study Plot the only evidence of a wave of pine infection apparent came in 1917, after which for some reason none has appeared, notwithstanding the fact that the natural Ribes were not eradicated.

At Portage Lake the greatest amount of pine infection came in 1932, after which a decline in numbers of infections took place. In this case R. hirtellus is the chief alternate host and Ribes eradication has not been performed.

The last two mentioned Pine Study Plots are interesting because of the low percentage of pine infection even after a period of years during which time but few cankers have developed. It would appear probable that while pine infection continues in major amount on these Study Plots, waves of infection have not occurred because of the lack of certain limiting factors. Should all factors necessary for infection appear at the same time, there would undoubtedly appear a huge wave of pine infection. Some main factors are: heavy amount of inoculum (basidiospores) coming from nearby Ribes, and proper temperature and humidity over an adequate length of time. Waves of infection are no doubt due to the accidental presence of all necessary and favoring factors at the same time in an area.

Waves of pine infection also appear in the history of Pine Study Plots upon which Ribes eradication has been performed, but these waves of pine infection cease following Ribes eradication. Waves of pine infection have appeared in 1937 on the Olaf Stolen, 1938 on the Charles Eason, 1951 on the Detroit Lakes, 1953 on the Calmar, and 1954 on the New Hope Pine Infection Study Plots.

MINNESOTA

Four Pine Infection Study Plots established in Minnesota during 1955 (Horseshoe Lake, Detroit Lakes, Portage Lake and Milaca) included a total of 3,807 examined trees, of which 251 or 6.6% were infected, 97 or 2.5% had been killed by Blister Rust, thus making a total of 348 or 9.1% of the trees affected with Blister Rust. All trees or 3% were dead from some other cause, and 2,968 or 77.5% did not show symptoms of Blister Rust.

Only five trees on the Detroit Lakes Study Plot were reported as too high to examine. This is because an effort was made on all Minnesota Pine Infection Study Plots, except Detroit Lakes, to record Blister Rust

cankers to the tops of all the trees, even when very high. In many cases it was necessary to climb the trees, and even then it is probable, particularly on the Hornechoke Lake Pine Infection Study Plot, that because of the severe damage from Blister Rust and difficulty in examining all twigs, all cankers could not be recognized.

In this connection it is interesting to note that there is a considerable contrast in the location of cankers with respect to tree height of white pine in the vicinity of Duluth, Minnesota, and the Hornechoke Pine Study Plot, as compared with other localities, especially in Wisconsin.

In Wisconsin on the areas under study, the vast majority of Blister Rust infections occur below a height of 5 to 10 feet, whereas on the Hornechoke Lake Pine Study Plot larger trees are encountered and most of the infections occur at heights over 5 feet (See Table IV).

A total of 553 Blister Rust cankers was recorded on the 525 infected trees on the four Minnesota Pine Study Plots. This gives an average of 4.3 cankers per infected tree and 0.5 cankers per examined tree.

The Portage Lake and Milana Pine Study Plots were established primarily because of the low percentage and slow progress of white pine Blister Rust infection, and because natural Ribes conditions had not been disturbed. It is hoped to follow the natural progress and intensification of Blister Rust on these Study Plots.

Pine Infection After Ribes Eradication

Initial Ribes eradication was performed on the area in which the Detroit Lakes Pine Infection Study Plot is located between July 24 and August 26, 1934. Complete Ribes eradication was not accomplished. A record of the Ribes present on the Study Plot and in 105 square chains adjacent was made in October, 1935. Three species of Ribes were found present: R. cynosbati (predominating), R. triste, and R. hirtellum. About a dozen R. americanum under cultivation also occur just east of the area studied. A total of 563 bushes with 9,454.3 F.L.S. was found on the total 118 square chains. Ribes density was heaviest on the east side of the area. Therefore a calculated average of 72 bushes with 206 feet of live stem per acre, or an average of about 3 feet of live stem per bush, was present on the Study Plot (See Table III, column (4)). These bushes and feet of live stem were obtained from missed bushes, imperfectly pulled bushes, sprouts from crowns or stems which had continued growth, or regenerated.

An examination of columns (4) and (5) in Tables II and III shows the development of neither newly infected trees nor any other additional cankers on the pine exposed since the initial Ribes eradication in the summer of 1934. It is apparent that the wild R. cynosbati was the chief source of inoculum and although complete Ribes eradication was not accomplished, the feet of live stem were sufficiently reduced to give absolute control of the disease for the period the plot has been under observation.

Data showing similar effective control of Blister Rust may be found in all Pine Study Plots where Ribes eradication has been performed on all species involved as sources of inoculum. The only exceptions to an absolute control were found in those cases where cultivated Ribes only and not associated wild Ribes were eradicated in an area, namely, on the Hornechoke Lake (Minn.) and Olaf Stolze (Mich.) Pine Study Plots, which will be discussed below relative to the influence of many Ribes on pine infection.

Influence of Swamp Elms on Growth of Loblolly Pine

The Pine Infestation Study Plots (Harcourt Lake (Hima.) and Olaf Stokel (Mich.)) were studied primarily with respect to the influence of swamp species of Elms on the progress and intensification of Loblolly Pine Infestation on white pine. For the details of this study, references should be made to the 1935 Reports on these two Study Plots.

The Harcourt Lake Pine Infestation Study Plot consists of 80 square chains (6.3 acres), with most of the white pine in an upland pine-hardwood type (a Hima-C) and the Elms restricted within a Hima type-A swamp bordering the upland on the north, east and south.

The chief Elm concerned in this Study Plot was *E. glaberrima*, of which 1,710 bushes with 8,773.4 feet of live stem were recorded. Also a few bushes of *E. bicolor* (12 bushes with 71.0 F.L.S.), *E. canadensis* (2 bushes with 2.0 F.L.S.), and *E. nitens* (1 bush with 13.5 F.L.S.) were found. Practically all Elms occurred in the swamp which averaged 1,030.7 bushes with 2,166.7 F.L.S. per acre.

In studying the pine and Elm data, the Study Plot was arranged in zones, using the square chain upon which 16 bushes of cultivated red currants which were believed to be the chief source of inoculum and which had been eradicated in 1927, as the center of the plot. The pine and Elm data were arranged according to concentric zones every chain length from this center square chain and according to the distance (1) within the swamp and (2) within the upland.

Table II and Table III show that on the entire Study Plot 697 cankers were reported, of which 24 (3.4%) were dead cankers, 673 (96.6%) had produced axils several times, 3 (0.4%) had produced first axils, 5 (0.7%) had produced pyramidal cankers, and 1 (0.1%) had developed first pyramidal. No latent cankers were found. After the eradication of the cultivated red currant cankers in 1927, no additional trees have become infected and but 11 additional cankers (mostly in 1935) have developed. It is even possible that the year for the 10 cankers reported in 1935 may have originated in 1927 wood.

From this it is evident that although heavily infested swamp species were adjacent to Elm-free upland pine land, and such swamp Elms had been exposed to windblown seeds since about 1927, but little pine infection resulted after the eradication of the only upland Elm present.

Table VI is a copy of a table (Table IV) arranged for the 1935 Report on the Harcourt Lake Pine Study Plot showing trees and cankers arranged according to distance from the center of the Study Plot (1) within the swamp and (2) within the upland.

Of the 86 white pine trees examined within the swamp, 4 or 4.7% were found infested. Six cankers were reported on these 4 trees; 3 on growth prior to the time of cultivated Elm eradication, and 3 since 1927.

This indicates that within the boundaries of the swamp where heavily infested Elms were present there was a relatively small amount of pine infection. There is no increase in percentage of trees infected as the distance from the center of the Study Plot increases. In fact, the percentage of infected trees increased in the swamp toward the upland.

In the first chain distance in the swamp away from the swamp, 11.8% of the trees are infected; in the second, none; in the third, 39.3%; in the fourth, 7.1%, and in the fifth, 7.1% (See Chart I, fig. 2). The description of the second chain distance from the center of the Study Plot with none, and the third chain with 39.3% average, together about 10%, so that we may say that the infection data indicates an influence of inoculum from the upland into the swamp for at least three chain lengths, meaning the percentage of tree infection to be about double that of infection (7.1%) in the swamp farther from the upland.

In Table VI it is also to be observed that the percentage of infected trees gradually increased as the distance increases from the swamp, thus from the first chain distance to the fifth chain distance there is the following sequence of tree infection: (1) 6.3%; (2) 4.8%; (3) 54.0%; (4) 100%; (5) 100% (See Chart I, fig. 2).

These data would be more convincing if a larger number of trees were involved in the chain distances farther from the swamp, but in view of the size of the trees and the number of infections on the trees, it is quite striking to a field observer. The increase of percentages of infection as one goes away from the swamp might be inferred to indicate a negative influence of swamp Ribes on amount of infection, and had equivalent upland conditions and Ribes prevailed in this area, it is possible a more uniform percentage of tree infection might have been found.

A marked contrast between swamp and upland conditions is shown by the average number of cankers. In the swamp (34 sq. mi.) there was an average of 1.5 cankers per infected tree and 0.11 cankers per examined tree, whereas in the upland (58 sq. mi.) there was an average of 16.1 cankers per infected tree and 1.9 cankers per examined tree (See Chart I, fig. 1). The average cankers for the combined swamp and upland resemble closely those for the upland, being 15.3 cankers per infected tree and 1.6 cankers per examined tree.

The Olaf Stolen Study Plot consists of a pine plot of 4 square chains, bordered on the south, east and partly on the west by a Ribes type-1 swamp. To the north and northwest is upland pine-landed Ribes type-0. European cultivated black currants (*R. nigrum*) which were chiefly discovered in introducing and establishing Blister Rust on white pine in this area had been eradicated in 1930. Whether or no wild Ribes were known to occur on the upland, no native Ribes were present on the 4 square chain Pine Study Plot. Wild Ribes (chiefly *R. glandulosum*) had never been eradicated from the adjacent swamp and these swamp Ribes were known to be infected. In order to study the density of Ribes, the Study Plot was extended to include 125 square chains upon which was found a total of 637 bushes with 2,540.3 F.L.S., or an average of 60 bushes with 364 F.L.S. per acre within the swamp.

From Tables II and III it will be noted that following the cultivated black currant eradication in 1930, only 5 trees have become infected and but 56 additional cankers developed. The inoculum for this infection presumably came from the Ribes within the adjacent swamp. All pine infection which took place on the Olaf Stolen Pine Study Plot was within one chain's distance of the swamp.

The results from data secured on the two above Pine Infection Study Plots indicate that while swamp Ribes may serve as a source of inoculum for Blister Rust, nevertheless pine infection results to a very limited degree.

Young Bites, therefore, do not appear to be an effective wildlife for promoting pine infection, even when heavily infected, as upland species, and may be regarded as less dangerous in relation to the spread and intensification of Bites Rust, even within ranges, than nearby upland Bites.

Intensification of infection on nearby upland pine from infected young Bites is less than infection on nearby young pine from upland Bites.

PERMANENT BITES REGENERATION STUDY PLOTS NORTH CENTRAL REGION

In 1935 small Bites Regeneration Study Plots, laid out in areas in which Bites eradication was to be performed later, were initiated in the North Central Region. These Study Plots were uniformly 15.5 feet wide and extended for one or more chains in length. One hundred and five such Permanent Bites Regeneration Study Plots were initiated in the year 1935.

Data concerning the original number of bushes and feet of live stem for each Bites species present in the Study Plots were taken. Following the establishment of the Bites Study Plots, Bites eradication crews who had no knowledge of the Study Plots were allowed to perform typical Bites eradication in the area. Another inspection of the Study Plots was performed following the Bites eradication, after which annual inspections are to be made.

The purpose for establishment of Bites Regeneration Study Plots is to determine the effectiveness of the control program, to check on the feet of live stem which is safe to leave and at the same time secure a record of the Bites rust damage, and to determine the effective time for second Bites eradication. This effective time for second Bites eradication is that period after Bites surviving eradication are regenerating after eradication are plainly visible, and before such bushes have produced seeds.

For the bookkeeping used in establishing Permanent Bites Regeneration Study Plots, refer to the 1935 Annual Report (pp. 54 to 77).

Seventy-seven Permanent Bites Regeneration Study Plots were established in the North Central Region in 1936, of which 30 were established in Michigan, 25 in Minnesota, 2 in Ohio and 5 in Wisconsin. The 77 Bites Plots included 35 treated in an A-type Bites, 41 in a C-type pine-hardwood upland, and 1 in a D-type jack pine upland type, and in all covered an area of 1,525 acres (See Table VIII).

Adding the above number of Bites Plots to those established in 1935, there are now present in the North Central Region 155 Permanent Bites Regeneration Study Plots, of which 1 is established in Iowa, 51 are established in Upper Michigan, 25 in Lower Michigan, 62 in Minnesota, 10 in Ohio, and 6 in Wisconsin. The 155 Bites Plots are also distributed according to bushes or Bites types, as follows:

98 in Bites Type-A				
0	*	*	*	-0
23	*	*	*	-0
3	*	*	*	-0

and they cover a total area of 5,770 acres, or about 3.3 acres (See Table VIII).

Table VIII gives the name of the state, property owner, county, township, range, section and "40" in which the plots established in 1935 are located. The Ribes types and number of miles are included also. Reference should be made to 1935 Annual Report (pp. 55-57) for similar information on the Ribes Plots established in 1935.

In 1935 Ribes Regeneration Study Plots were established in Michigan in the counties of Alger, Delta, Iron, Mackinac, Marquette, Ontonagon, Alpena, Cheboygan, Crawford, Gladwin, Grand Traverse, Iosco, Leelanau, Montmorency, Ogemaw, Oshtemo, Otsego, and Roscommon. In 1936 Ribes Plots were placed in the following additional counties: Dickinson, Houghton, Lawrence, Menominee, Schoolcraft, Keweenaw and St. Clair.

In Minnesota Ribes Regeneration Study Plots were established in 1935 in Beltrami, Cass and Cook counties, to which were added in 1936: Aitkin, Becker, Carlton, Chicago, Hubbard, Isanti, Kanabec, Koochiching, Lake, Morrison, Pine, St. Louis and Todd.

Iowa has but one county, Winneshiek, represented by a Ribes Regeneration Study Plot.


Ohio established Ribes Regeneration Study Plots in 4 counties: Belmont, Columbiana and Monroe (1935) and Ashland (1936).

Wisconsin established Ribes Regeneration Study Plots in 9 counties: Ashland, Bayfield, Forest, Iron, Jackson, Langlade, Marathon, Sawyer and Shawano in 1935, and added Manitowish, Portage, Wood and Vilas in 1936.

In the 1935 Report on Permanent Ribes Regeneration Study Plots, a comparison of the amount of Ribes on the Plots before and after initial eradication the same year (1935) was given for each species of Ribes found. Since in a study of regeneration of Ribes it seems best to allow some time for it to take place, it is believed best, at this time, to await a detailed report on these Study Plots for at least another year. Therefore a further detailed report is omitted from the 1935 Report.

From our studies on Swamp Ribes and the tendency to cut down the amount of swamp area worked bordering white pine stands, it is believed that the number of Swamp-Type Ribes Regeneration Study Plots is approximately adequate for the purpose of our study, so that in the future fewer Swamp-Type Ribes Plots need to be established.

Because our major interest is in Upland Pine-types (especially Upland pine-hardwood types as Ribes type-C), and since Ribes density is not as great within Upland as in Swamp areas and, therefore, longer plots are essential in order to secure good sampling, more emphasis should be given to the Upland Ribes Study Plots. For this reason in the following season it is hoped to establish in each state several (up to five) Ribes Regeneration Study Plots in Upland types which will be at least 15 chains in length.


E. E. Hensy
Agent
Plant Disease Control.

White Pine Blister Rust Pine Infection Study Plots

North Central Region

Table I. - Pine Infection Plots Studied in 1938 and General Notes. (1938 Report)

Name of Pine Infection Study Plot (c)	County (d)	Size of Plot in Acres Plots Studied Studied		Date Plot Estab- lished (e)	Date Rust Eradic- ated (f)	No. Trees Exam- ined (g)	% Trees Infected (h)	% Trees Killed by R.R. (i)	% Total Trees Affected by R.R. (j)	Oldest Tree's Age at Infection (k)	Year of Infection (l)	Average Number Cankers per Tree (m)	Average Number Cankers per Tree (n)	Rust species probably chiefly responsible for (a) Introduction (b) Intensification (o)	Cankers probably present prior to R. Rad. (p)	No. Trees First Becoming Infected after R. Rad. (q)	
		(c)	(d)														
Calmar*	Scout	(15 ab. long)		10/29/34	Oct. 1934	106	84.0	1.9	85.9	1925	145	1935	7.8	4.1	(a) and (b) <u>R. nigra</u>	100.0	0
Old Union	Marquette	0.4	12.5	10/30/35	G.R.O. June 1930 wild Rites over	119	40.3	19.3	59.6	1922	400	1929	8.3	4.1	(a) and (b) <u>R. nigra</u>	87.9	5
Lower Michigan (Notes studied to 1936)																	
See Note*	Portage	0.6	42.4	11/8/35	wild Rites Oct. 1935	1400	54.9	14.8	69.7	1926	4551	1934	4.0	3.3	(a) and (b) <u>R. cynobati</u>	100.0*	0
Charles Nease	Shawano	0.2	0.0	3/17/36	(May 1938 June 1934)	426	19.7	21.6	41.3	1924	212	1928	2.5	0.5	((a) <u>R. nigra</u> ? (b) <u>R. cynobati</u>	100.0	0
Winkelander	Oneida	1.0	1.0	2/21/36	Never	745	27.5	10.2	37.7	1923	320	1932	2.8	0.8	((a) <u>R. nigra</u> ? (b) <u>R. cynobati</u>	-	-
Gertie	Portage	1.2	1.2	5/27/36	Never	1152	44.7	19.4	64.1	1920	2135	1934	4.1	1.6	(a) and (b) <u>R. cynobati</u>	-	-
Minnesota																	
Foreman Lake	St. Louis	0.3	0.3	9/28/36	Never	429	18.4	0.0	18.4	1918	699	1929	13.2	1.6	(a) Unknown (b) <u>R. sativum</u>	98.4	0
Detroit Lakes	Becker	0.7	11.8	10/22/36	July 1934	1705	7.0	5.4	12.4	1924	196	1930	1.7	0.1	(a) and (b) <u>R. cynobati</u>	100.0	0
Portage Lake	Crow Wing	2.0	0.0	11/4/36	Never	1145	4.3	0.3	4.6	1925	63	1932	1.24	0.05	(a) Unknown (b) <u>R. hirtellum</u>	-	-
Wilsey	Wille Lake	7.0	0.0	11/7/36	Never	225	3.5	0.4	3.9	1923	12	1927	1.5	0.05	(a) Unknown (b) <u>R. cyn.</u> , <u>R. amar.</u> etc.	-	-
Totals	(10 Study Plots)	21.0	75.8	-	-	7471	30.8	7.4	40.2	1918	9589	-	4.7	1.84	-	-	-

* Date given here is from map of the tree and Canker Summary and not from 1936 yearly record.

** One canker was a doubtful exception.

*** Inoculum possibly coming from wild Rites not eradicated.

White Pine Blister Rust Infection Study Plots (Pine)

North Central Region

Table III. - Summary of blisters appearing on different years' growth at Cancer Center (1935 Data)

Year's growth at Cancer Center	Upper Wisconsin				Diacoma				Minnesota												Totals for Region							
	Calumet		Clarkston		Upper Pine		New Hope		Garfield		Dismal Swamp		Winchester		Totals for Pineconish		Horsehoe Lake		Detroit Lakes		Surge Lake		Silos		Totals for Pine.			
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)	(27)	(28)	(29)	(30)	(31)	(32)
1918																1	0.1							1	0.1	1	0.01	
1919																10	1.4							10	1.0	10	0.10	
1920									1	0.01					1	0.01	5	0.7						5	0.5	6	0.06	
1921									0	0.00					0	0.00	14	2.0						14	1.4	14	0.14	
1922			13	3.1	13	1.3			3	0.34					1	0.1	5	0.7						34	3.2	32	0.32	
1923			11	2.3	12	1.0			3	0.34			1	0.1	1	0.01	48	6.9						48	4.8	41	0.40	
1924			29	5.9	29	2.6			5	0.55	2	2.0	0	0.0	10	0.17	52	7.8	1	1.0				55	5.2	57	0.56	
1925			59	12.1	59	5.2			13	1.3	13	1.1	5	0.5	10	0.33	109	15.6	3	3.1	1	1.0	1	0.1	117	11.1	104	1.04
1926			53	11.0	53	4.7	2	0.04	35	3.5	29	2.6	5	0.5	78	0.55	77	11.1	14	7.1	0	0.0	0	0.0	21	2.1	212	2.12
1927			148	30.9	148	13.2	1	0.01	23	2.3	37	3.3	3	0.3	123	1.24	128	18.4	10	6.2	5	4.6	7	3.4	154	15.4	140	1.40
1928			79	16.2	79	7.0	4	0.10	111	11.1	64	5.8	10	1.0	148	2.53	60	8.8	10	6.2	5	4.6	2	25.0	27	2.7	205	2.05
1929	1	1.4	24	5.0	43	3.8	9	0.19	75	7.5	40	3.6	24	2.4	150	1.07	59	8.8	24	15.3	1	1.3	0	0.0	24	2.4	200	2.00
1930	24	5.7	16	3.3	42	3.7	180	8.55	57	5.7	11	1.0	21	2.1	119	0.95	35	5.7	41	20.0	2	2.5	1	0.5	29	2.9	200	2.00
			O.B.D. Grad.																									
1931	39	8.0	19	3.9	39	3.5	115	4.72	52	5.2	8	0.8	60	6.0	330	5.41	35	5.8	62	31.4	15	20.4	0	0.0	84	8.4	480	4.80
1932	160	16.5	9	1.8	119	10.1	259	8.55	154	15.4	0	0.0	57	5.7	39	5.41	39	6.6	32	11.2	24	30.1	0	0.0	95	9.5	575	5.75
			Wild Blister Grad.																									
			Wild Blister Grad.																									
1933	347	35.6	7	1.4	504	43.8	1607	37.31	623	62.3	0	0.0	217	21.7	1577	12.55	10	1.4	9	4.0	5	12.4	0	0.0	27	2.7	2318	23.18
1934	119	10.4	0	0.0	119	10.5	2221	48.78	892	89.2	0	0.0	164	16.4	1278	12.78	1	0.1	0		2	5.2	0	0.0	1	0.1	1279	12.79
	O.B.D. Grad.																											
1935	1	0.2	1	0.2	1	0.1	15	0.33	15	1.5	0	0.0	1	0.1	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	1	0.1	31	0.31
			Wild Blister Grad.																									
1936	0	0.0	0	0.0	0	0.0	1	0.01	0	0.0	0	0.0	0	0.0	1	0.01	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	1	0.01
	O.B.D. Grad.																											
Undetermined	1	0.2	0	0.0	1	0.1	17	0.37	1	0.1	2	0.2	0	0.0	2	0.02	0	0.0	2	1.0	0	0.0	0	0.0	0	0.0	3	0.3
Total	100	100.0	100	100.0	100	100.0	100	100.0	100	100.0	100	100.0	100	100.0	100	100.0	100	100.0	100	100.0	100	100.0	100	100.0	100	100.0	100	100.0
Species Forming "Vagab"	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Blister Species	<i>B. nigra</i>	<i>B. nigra</i>	<i>B. nigra</i>	<i>B. nigra</i>	<i>B. nigra</i>	<i>B. nigra</i>	<i>B. nigra</i>	<i>B. nigra</i>	<i>B. nigra</i>	<i>B. nigra</i>	<i>B. nigra</i>	<i>B. nigra</i>	<i>B. nigra</i>	<i>B. nigra</i>	<i>B. nigra</i>	<i>B. nigra</i>	<i>B. nigra</i>	<i>B. nigra</i>	<i>B. nigra</i>	<i>B. nigra</i>	<i>B. nigra</i>	<i>B. nigra</i>	<i>B. nigra</i>	<i>B. nigra</i>	<i>B. nigra</i>	<i>B. nigra</i>	<i>B. nigra</i>	
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
av. (No. Blister Per Acres (Pine F.L.D.)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Total Trees Exam.	104	119	127	148	159	163	163	163	163	163	163	163	163	163	163	163	163	163	163	163	163	163	163	163	163	163	163	
Total Trees Infest.	89	59	148	951	519	54	206	1700	83	119	51	8	33	211	55	2	33	211	55	2	33	211	55	2	33	211	55	
Total Trees Affected	91	82	179	950	545	160	231	1780	85	121	56	9	35	212	56	2	35	212	56	2	35	212	56	2	35	212	56	

White Pine Blister Rust Infection Study Plots (Pine)
North Central Region
Table IV. - Tree and Canker Summaries according to Height Classes.

Upper Michigan										Wisconsin										Minnesota										North Central Region									
Height Classes	% Trees						Cankers		% Trees						Cankers		% Trees						Cankers		% Trees						Cankers								
	Total	%	%	%	%	% Dead	Aver. No.		Total	%	%	%	%	% Dead	Aver. No.		Total	%	%	%	%	% Dead	Aver. No.		Total	%	%	%	%	% Dead	Aver. No.								
	Trunks	Infected	Killed	Affect.	Without	Other	Tot.	Inf.	Exam.	Trunks	Infected	Killed	Affect.	Without	Other	Tot.	Inf.	Exam.	Trunks	Infected	Killed	Affect.	W/O	Other	Tot.	Inf.	Exam.	Trunks	Infected	Killed	Affect.	W/O	Other	Tot.	Inf.	Exam.			
	Exam. by B.R.	by B.R.	by B.R.	by B.R.	by B.R.	by B.R.	No.	Tree	Tree	Exam. by B.R.	by B.R.	by B.R.	by B.R.	by B.R.	by B.R.	No.	Tree	Tree	Exam. by B.R.	by B.R.	by B.R.	by B.R.	by B.R.	by B.R.	No.	Tree	Tree	Exam. by B.R.	by B.R.	by B.R.	by B.R.	by B.R.	by B.R.	No.	Tree	Tree			
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)	(q)	(r)	(s)	(t)	(u)	(v)	(w)	(x)	(y)	(z)	(aa)	(bb)	(cc)	(dd)	(ee)	(ff)	(gg)	(hh)	(ii)	(jj)	(kk)			
0.1 - 2.0	55	40.0	9.3	49.3	50.7	1.9	46	2.1	0.8	1123	17.0	39.3	49.7	11.0	638	3.5	0.7	768	2.3	3.7	6.0	85.2	8.8	26	1.4	0.03	1945	14.9	11.5	26.4	63.8	9.8	706	2.4	0.4				
2.1 - 4.0	76	54.6	20.3	76.9	16.4	2.7	244	5.5	2.0	776	17.4	66.1	31.8	2.1	1496	4.0	1.9	301	3.3	3.7	7.0	87.4	5.6	10	1.0	0.03	1153	37.1	14.4	51.5	45.5	3.0	1730	4.0	1.2				
4.1 - 6.0	30	46.0	85.0	90.0	30.0	0.0	186	14.0	6.3	796	14.2	67.3	30.7	2.0	2128	5.0	2.7	396	6.1	1.7	9.8	90.4	1.8	31	1.3	0.06	1212	37.6	10.3	47.9	50.2	1.9	2285	5.0	1.2				
6.1 - 8.0	13	39.5	46.1	64.6	15.4	0.0	10	3.0	1.2	417	20.0	2.3	86.3	31.7	0.0	1014	4.1	2.4	297	9.8	0.7	10.5	89.2	0.3	46	1.6	0.15	727	39.1	5.9	45.0	54.9	0.1	1075	3.8	1.1			
8.1 - 10.0	7	42.9	29.6	71.4	28.6	0.0	20	6.7	2.9	219	24.9	2.0	63.9	20.2	0.2	547	4.2	2.3	278	8.6	0.6	8.6	91.4	0.0	33	1.5	0.13	504	31.0	2.5	33.5	66.1	0.4	603	3.9	1.1			
All trees examined to 8 feet only.										All trees examined to 8 feet only.										All trees examined to entire height.										All examined to 8 feet only except Minn.									
10.1-12.0	9	28.9	11.1	100.0	0.0	0.0	31	3.4	2.7	126	17.5	4.0	23.8	33.7	0.8	355	4.4	2.8	234	9.0	0.0	2.0	91.0	0.0	35	1.7	0.16	369	28.2	1.6	29.8	69.9	0.3	442	4.3	1.1			
12.1-14.0	7	25.7	0.0	25.7	14.3	0.0	51	3.3	7.3	72	14.3	1.4	53.6	44.4	0.0	150	4.1	2.2	228	8.3	0.5	8.8	91.2	0.0	41	2.2	0.17	307	20.8	0.7	21.5	78.5	0.0	252	3.9	0.4			
14.1-16.0	15	100.0	0.0	100.0	0.0	0.0	124	15.3	12.5	30	22.3	0.0	53.3	46.7	0.0	46	2.9	1.5	227	7.0	0.0	7.0	91.3	1.8	24	1.5	0.11	272	17.3	0.0	17.3	81.3	1.4	254	5.4	0.6			
16.1-18.0	14	92.9	0.0	92.9	7.1	0.0	53	4.2	3.9	15	20.0	6.7	26.7	66.7	6.6	29	9.7	1.9	132	5.0	0.0	5.0	94.3	0.7	9	1.3	0.06	168	13.7	0.6	14.3	84.5	1.2	93	4.0	0.6			
18.1-20.0	2	100.0	0.0	100.0	0.0	0.0	23	12.5	12.5	14	70.4	0.0	71.4	28.6	0.0	122	12.2	8.7	83	9.6	0.0	9.6	90.4	0.0	48	8.0	0.58	99	20.2	0.0	20.2	79.8	0.0	195	9.8	2.0			
Over 20 ft.	3	100.0	0.0	100.0	0.0	0.0	23	27.7	27.7	16	20.0	0.0	37.5	50.0	12.5	9	1.5	0.6	398	13.8	0.0	13.8	85.4	0.8	662	12.0	1.66	417	15.3	0.0	15.3	83.5	1.2	758	11.8	1.2			
Undetermined	4	50.0	25.0	75.0	0.0	25.0	5	4.0	4.0	138	0.7	23.9	84.6	0.7	14.7	2	2.0	0.01	158	0.0	30.4	30.4	0.0	69.6	0	0.0	0.00	298	1.0	54.7	55.7	0.3	44.0	8	2.7	0.0			
Totals	225	36.7	17.2	74.2	24.0	1.8	397	6.9	3.3	3727	16.2	58.5	36.7	4.8	6646	4.1	1.75	2507	6.6	2.8	9.1	84.6	0.0	968	4.2	0.28	7471	26.0	9.9	35.9	53.8	2.3	8401	4.1	0.9				
Trees too high to describe	2									124								5										151											
Grand total																																							
Trees	227									3863								3512											7602										

White Pine Blister Rust Pine Infection Study Plot

North Central Region

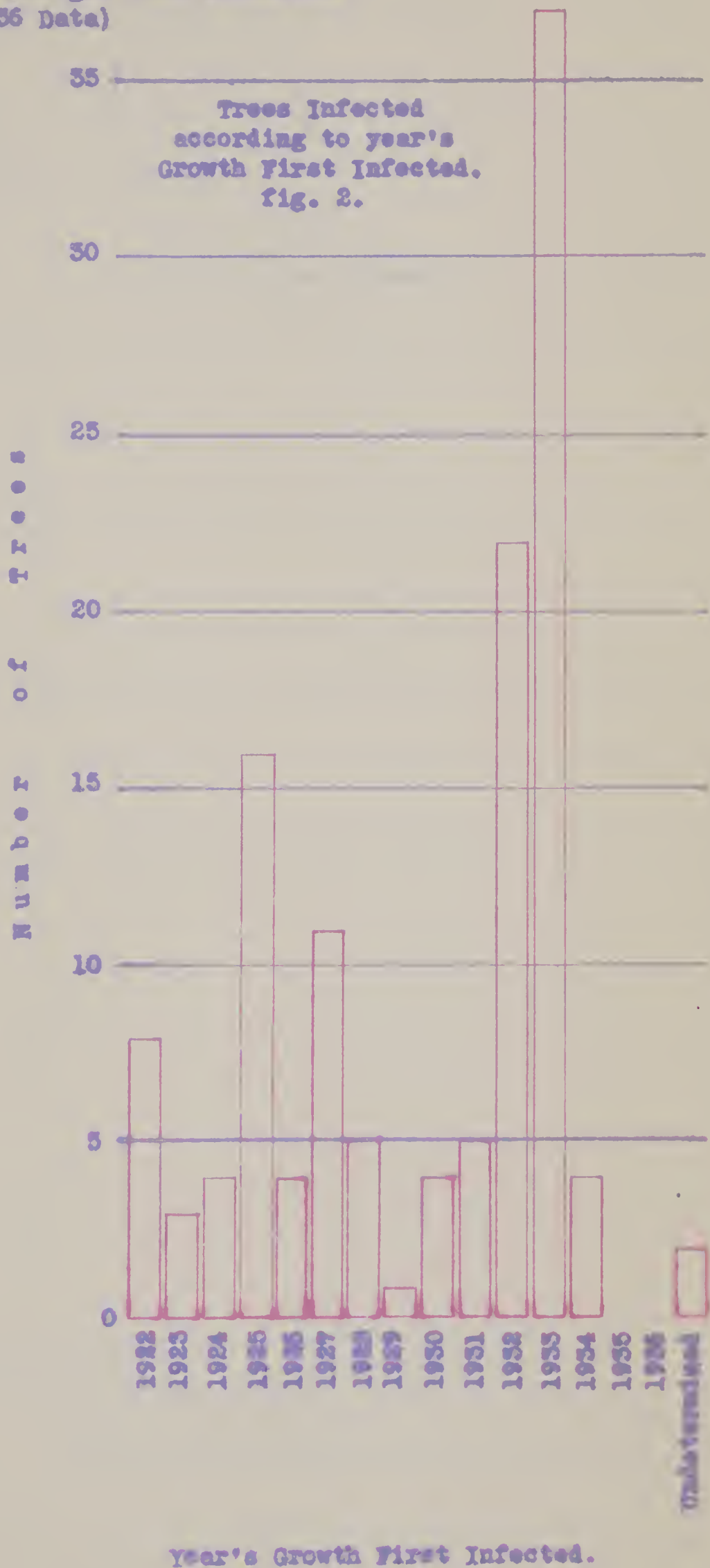
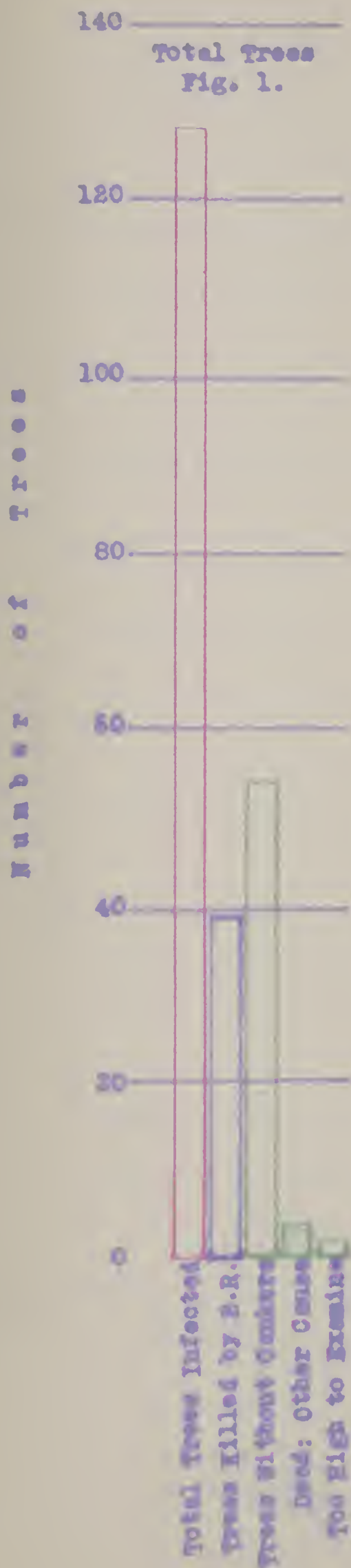
Table V. - Composite Summary of Colman Pine Infection Study Plot.
(1930 Report)

Tree Totals									
Year's Growth at Canker Center	Year's Growth at Canker Center	Number of Trees	Inf. Trees ea. year	Tot. Bl. in. Inf. Trees ea. year	Accumulated Total		Number of Cankers		
					% Inf.	% Tot. Bl. in.	by Year's Growth	Accumulated Number by Year's Growth	Divided by Accum. 100 Examined
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)
1929	7	7.9	6.6	7	7.9	6.6	9	7	1.3
1930	16	18.0	15.1	23	25.9	21.7	24	53	1.4
1931	10	11.2	9.4	33	37.1	31.1	39	72	1.2
1932	28	31.3	25.4	61	68.6	57.5	105	177	1.7
1933	26	29.2	24.5	87	97.8	82.0	347	524	4.0
1934	1	1.1	1.0	88	98.9	83.0	119	643	7.3
1935	0	0.0	0.0	88	98.9	83.0	(?) 1	644	7.3
1936	0	0.0	0.0	88	98.9	83.0	0	644	7.3
Undetermined	1	1.1	1.0	89	100.0	84.0	1	645	7.2
Total Trees Infected	89	100.0	84.0	89	100.0	84.0	645	645	7.2
Trees Killed by B.R.	2								607.6
Total Trees Affected	91								607.6
Dead: other cause	1								607.6
Trees without Cankers	14								607.6
Total Trees Examined	105								607.6
Trees Missing	2								607.6
Grand Total Trees	108								607.6
% Trees Infected	84.0								607.6
% Trees Killed B.R.	1.2								607.6
% Trees Affected B.R.	85.9								607.6
% Dead: other cause	0.9								607.6
% Without Cankers	13.2								607.6
AV. No. per Cankers	7.2								607.6
per Infected Tree									607.6
per Examined Tree	6.1								607.6

Table VII - Summary of Nixes Recapture Study Plot North Central Mexico 1936 Report.

WHITE PINE BLISTER RUST PINE INFECTION STUDY PLOTS
North Central Region

CHART I
Summary of Upper Michigan Tree Infection
(1936 Data)



PART II-
Summary of Wisconsin Tree Infection
(1896 Date)

Total Trees
fig. 1.

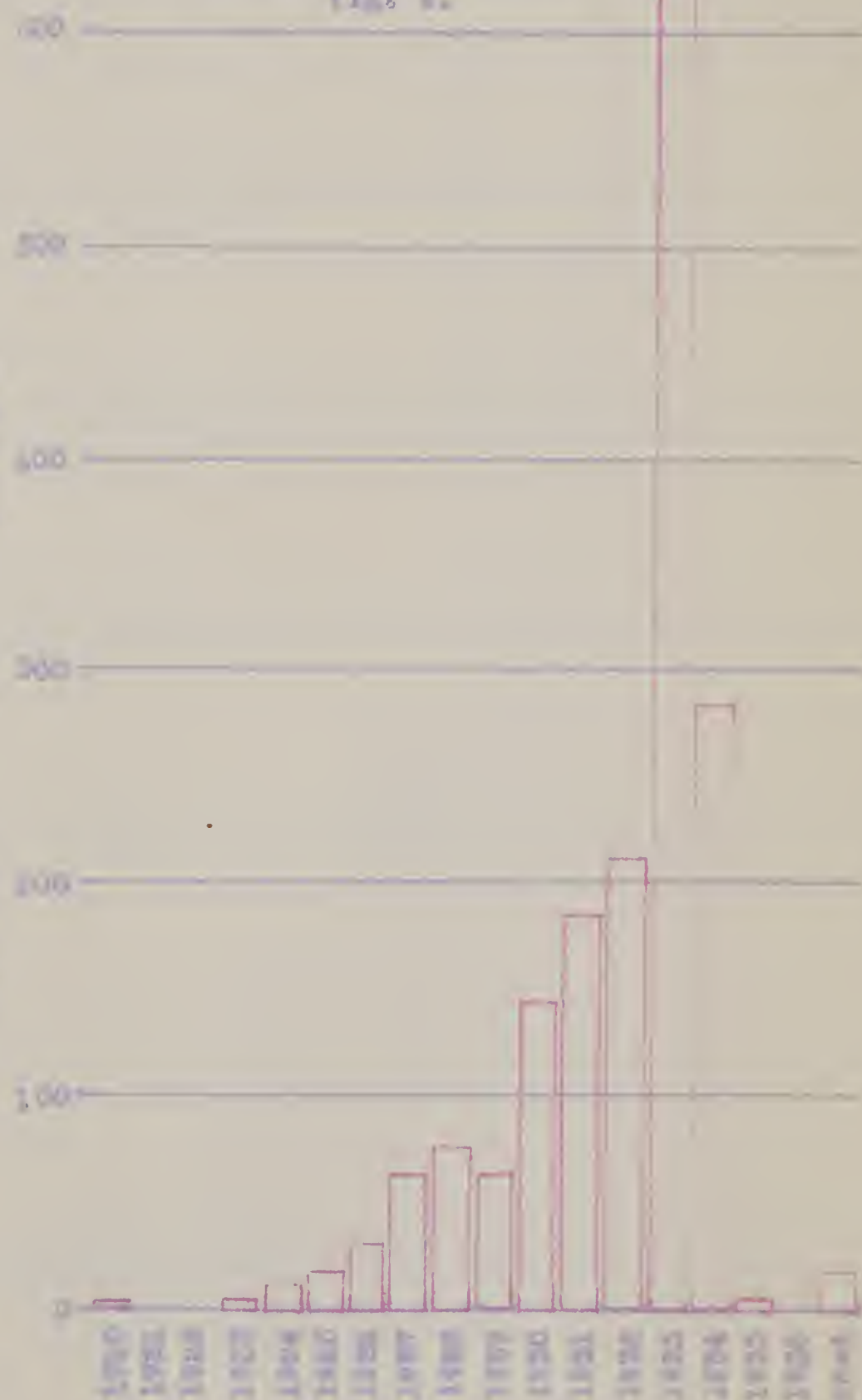
Trees Infected
according to Year's
Depth First Infected.
fig. 2.

Number of Trees



Trees Infected
Killed by B.B.
these 200,000 trees
were killed by
B.B. in 1890
and 1891

Number of Trees

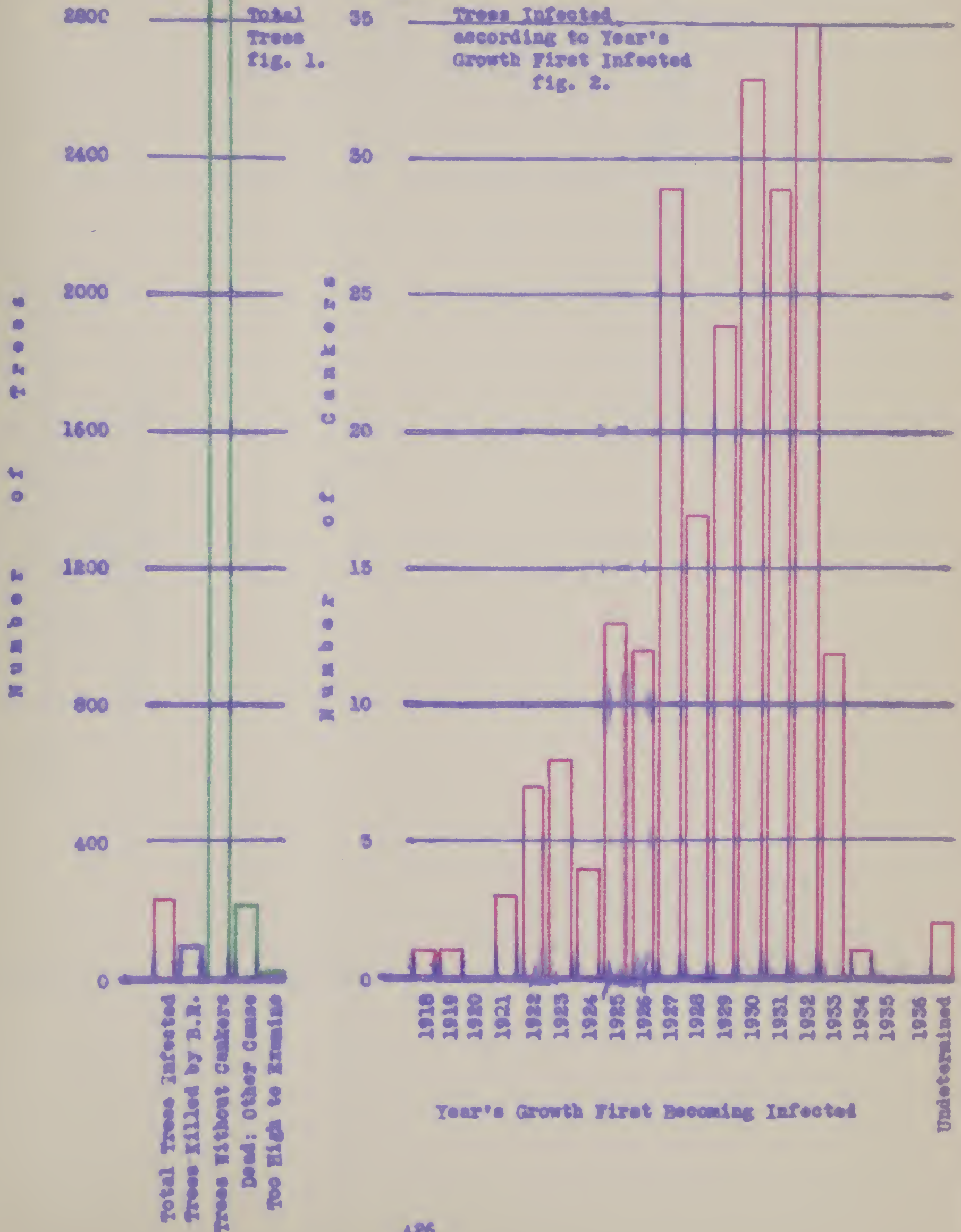


Year's Depth First Infected

WHITE PINE BLISTER RUST PINE INFECTION STUDY PLOTS North Central Region

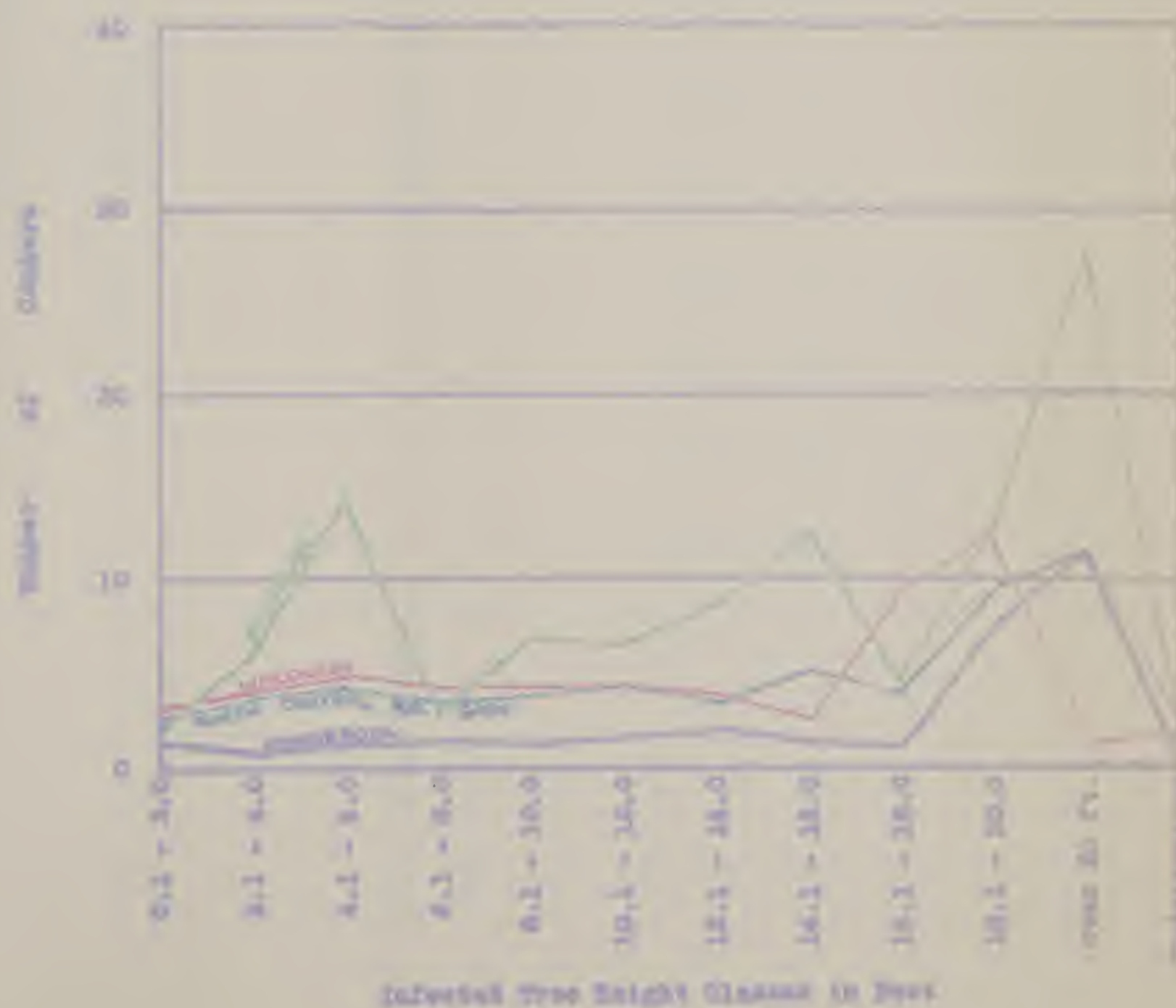
CHART III.

Summary of Minnesota Tree Infection
(1936 Data)



STATE FOREST SERVICE REPORT FOR THE YEAR 1909
 Forest Management Division

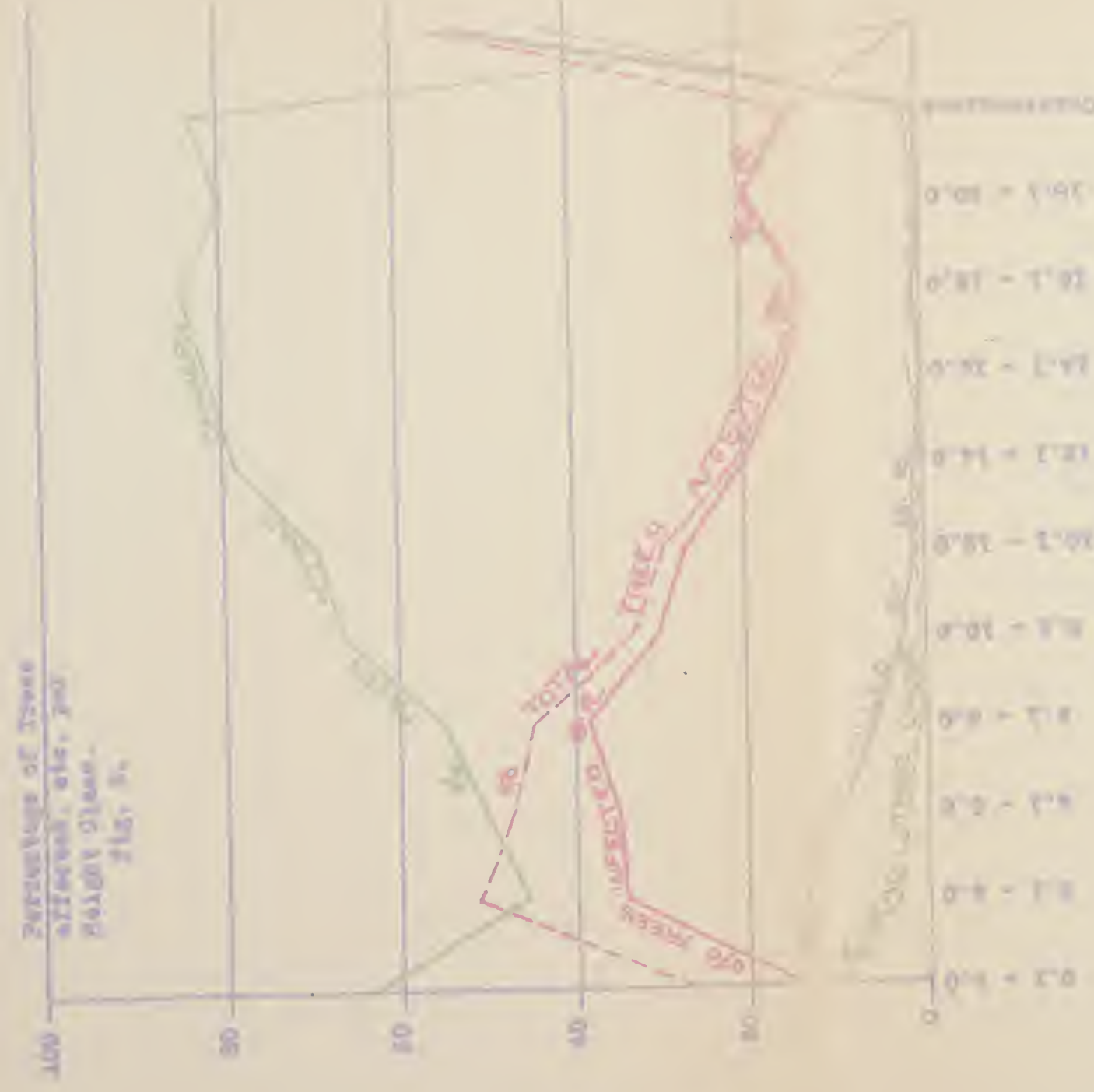
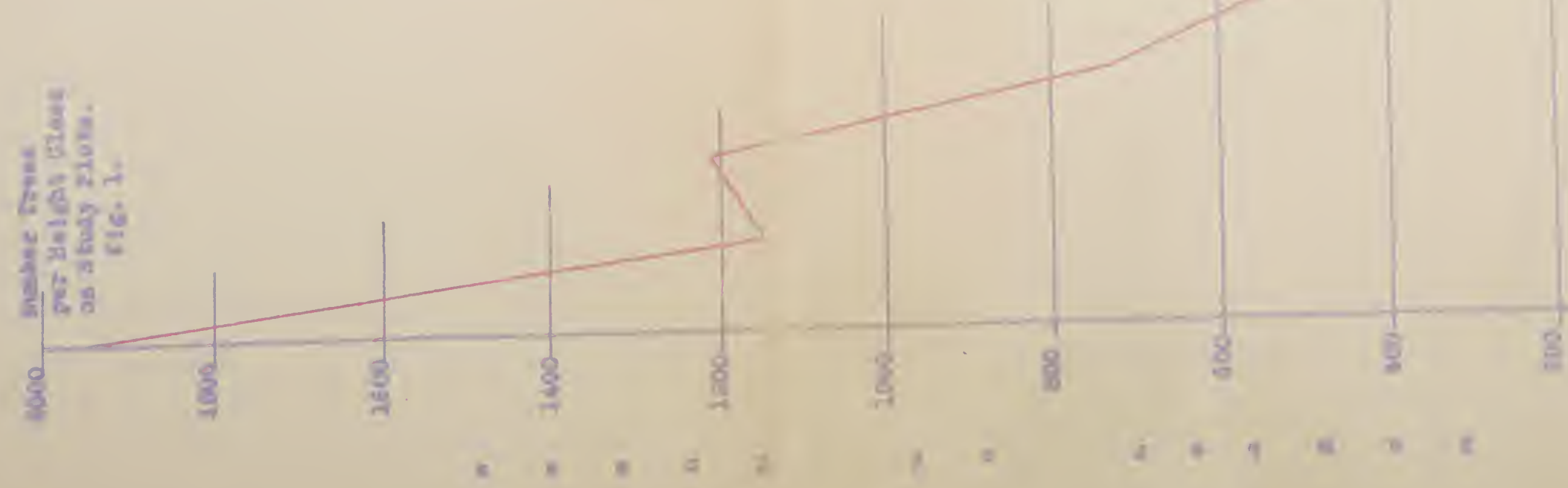
Table VI.
 Average Number of Trees per Acre in
 Various Height Classes,
 (1909 Data)



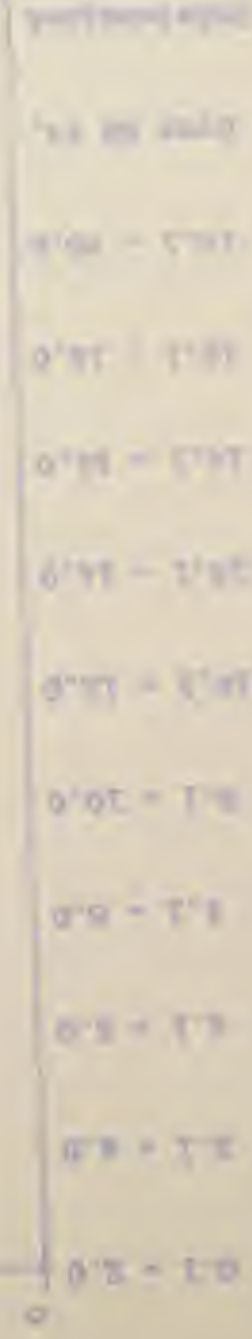
WHITE PINE PLANTATIONS AND THE INFLUENCE OF HEIGHT CLASS

CHAPTER VII.
THE SUMMARY According to Height Classes
1930 Data

Number Trees
per Height Class
on Study Plots.
Fig. 1.



Height Class



Height Class

more

